THE NEXT ISSUE OF BOTANICAL ABSTRACTS WILL APPEAR IN MAY

W. J. Dorsey

Vol. 15 MARCH, 1926 No. 3

ENTRIES 2155-3050

BOTANICAL ABSTRACTS

PUBLISHED UNDER THE DIRECTION OF

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

IMPORTANT NOTICE

Beginning with the literature of 1926, the Union of American Biological Societies will inaugurate **BIOLOGICAL ABSTRACTS,** the first issue to appear about June, 1926. The journal will strive to present adequate abstracts and accurate indexes of the world's literature in theoretical and applied biology.

As announced, **BOTANICAL ABSTRACTS** will be merged in the new journal, as will **ABSTRACTS OF BACTERIOLOGY** and the abstracting sections of several other journals. In order, however, that there may be no serious gap between Botanical Abstracts and Biological Abstracts, the present additional volume (Volume 15) of Botanical Abstracts is being issued to cover the literature appearing to the close of 1925, as well as to bring up the more serious arrears and omissions during the period covered by Botanical Abstracts (1919–1925). This additional volume will be kept open long enough (year or more, with issues becoming less frequent) to permit at least moderately complete accumulation of the material in question; for a time, therefore, Biological Abstracts and Botanical Abstracts will be appearing side by side, though obviously without duplication of effort.

The INDEXES for Volumes 12, 13, and 14 (respectively Nos. 10, 12, and 12) of Botanical Abstracts are in preparation and when issued will be distributed to subscribers without further charge.

All correspondence regarding subscriptions, back sets, and the index for the first ten volumes of Botanical Abstracts should be addressed to the Business Manager of Botanical Abstracts, Natural Science Building, Ann Arbor, Michigan, U. S. A.

☞Subscriptions to Biological Abstracts are now being entered. Address all correspondence to Biological Abstracts, University of Pennsylvania, Philadelphia, Pennsylvania, U. S. A.

Published for the Owners

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

by

THE WILLIAMS & WILKINS COMPANY

MT. ROYAL AND GUILFORD AVENUES

BALTIMORE, U. S. A.

Entered as second-class matter, November 9, 1918, at the post-office at Baltimore, Maryland, under the Act of March 3, 1879

Copyright, 1926, The Williams & Wilkins Company

FOR EDITORIAL AND BUSINESS NOTICES, SEE THIRD COVER PAGE

CONTENTS

Agronomy (Crops and Soils)..... 2155–2312
Bibliography, Biography and History..... 2313–2331
Botanical Education..... 2332–2349
Cytology..... 2350–2357
Ecology and Plant Geography..... 2358–2386
Forest Botany and Forestry..... 2387–2525
Genetics..... 2526–2579
Horticulture..... 2580–2622
Morphology, Anatomy and Histology of Vascular Plants..... 2623–2643
Morphology and Taxonomy of Algae..... 2644–2659
Morphology and Taxonomy of Bryophytes..... 2660–2690
Morphology and Taxonomy of Fungi, Lichens, Bacteria and Myxomycetes..... 2691–2766
Paleobotany and Evolutionary History..... 2767–2773
Pathology..... 2774–2849
Pharmaceutical Botany and Pharmacognosy..... 2850–2883
Physiology..... 2884–2957
Taxonomy of Vascular Plants..... 2958–3050

BOARD OF EDITORS FOR 1926 AND ASSISTANT EDITORS

Editor-in-Chief, J. R. SCHRAMM

Associate Editor-in-Chief, FREDERICK V. RAND

University of Pennsylvania, Philadelphia, Pennsylvania

EDITORS FOR SECTIONS

Agronomy (Crops and Soils). C. V. PIPER, U. S. Bureau of Plant Industry, Washington, D. C.—Associate Editor (Crops), MARY R. BURR, U. S. Bureau of Plant Industry, Washington, D. C.—Associate Editor (Soils), T. D. RICE, Soil Survey Investigations, U. S. Dept. of Agric., Washington, D. C.

Bibliography, Biography and History. CARROLL W. DODGE, Harvard University, Cambridge, Massachusetts.—Assistant Editor, CHARLES A. WEATHERBY, 11 Wells Avenue, East Hartford, Connecticut.

Botanical Education. C. STUART GAGER, Brooklyn Botanic Garden, Brooklyn, New York.—Assistant Editor, ARTHUR H. GRAVES, Brooklyn Botanic Garden, Brooklyn, New York.

Cytology. GILBERT M. SMITH, Stanford University, California.

Ecology and Plant Geography. GEO D. FULLER, The University of Chicago, Chicago, Illinois.

Forest Botany and Forestry. W. N. SPARHAWK, U. S. Forest Service, Washington, D. C.

Genetics. ORLAND E. WHITE, Brooklyn Botanic Garden, Brooklyn, New York.

Horticulture. F. C. BRADFORD, Michigan Agricultural College, East Lansing, Michigan.

Miscellaneous, Unclassified Publications. Editor, SAM F. TRELEASE, Dept. of Botany, Columbia University, New York, N. Y.

Morphology, Anatomy and Histology of Vascular Plants. A. J. EAMES, Dept. of Botany, Cornell University, Ithaca, New York.

Morphology and Taxonomy of Algae. WM. RANDOLPH TAYLOR, University of Pennsylvania, Philadelphia, Pennsylvania.

Morphology and Taxonomy of Bryophytes. ALEXANDER W. EVANS, Yale University, New Haven, Connecticut.

Morphology and Taxonomy of Fungi, Lichens, Bacteria and Myxomycetes.—H. M. FITZPATRICK, Cornell University, Ithaca, New York.—Assistant Editor, J. E. FLYNN, Cornell University, Ithaca, New York.

Paleobotany and Evolutionary History. EDWARD W. BERRY, The Johns Hopkins University, Baltimore, Maryland.

Pathology. FREDERICK V. RAND, University of Pennsylvania, Philadelphia, Pennsylvania.—Associate Editors, LILLIAN C. CASH and HARRY BRAUN, Bureau of Plant Industry, Washington, D. C.

Pharmaceutical Botany and Pharmacognosy. HEBER W. YOUNGKEN, Massachusetts College of Pharmacy, Boston, Massachusetts.—Assistant Editor, E. N. GATHERCOAL, 701 South Wood St., Chicago, Illinois.

Physiology. B. M. DUGGAR, Missouri Botanical Garden, St. Louis, Missouri.—Assistant Editor, WILLIAM J. ROBBINS, University of Missouri, Columbia, Missouri.

Taxonomy of Vascular Plants. J. M. GREENMAN, Missouri Botanical Garden, St. Louis, Missouri.—Assistant Editor, E. B. PAYSON, University of Wyoming, Laramie, Wyoming.

BOTANICAL ABSTRACTS

A monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense.

UNDER THE DIRECTION OF

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

J. R. Schramm, Editor-in-Chief

Frederick V. Rand, Associate Editor-in-Chief

University of Pennsylvania, Philadelphia, Pa.

Vol. 15 MARCH, 1926 No. 3

ENTRIES 2155–3050

AGRONOMY (CROPS AND SOILS)

C. V. Piper, *Editor*

Mary R. Burr, *Associate Editor* (Crops)

T. D. Rice, *Associate Editor* (Soils)

(See also in this issue Entries 2360, 2512, 2529, 2538, 2555, 2558, 2568, 2576, 2578, 2832, 2839, 2848, 2912, 2971)

CROP SCIENCE (ARVICULTURE)

2155. Anonymous. **A cotton research station for the British Empire.** Nature 116: 509. 1925.—This is a note on the station established in Trinidad.—*O. A. Stevens.*

2156. Anonymous. [**An excellent seedling variety of cane.**] Australian Sugar Jour. **17:** 259. 1925.—S. C. 12/4, a seedling variety of cane introduced from the St. Croix Exp. Sta. into Cuba, is said to yield a high tonnage of early-maturing cane rich in sucrose, and to be resistant to mosaic disease, gumming, and drought.—*Nellie E. Fealy.*

2157. Anonymous. **Annual field days at Mackay. Demonstration of the year's work.** [Bundaberg Mail, June 8] Australian Sugar Jour. **17:** 214–215. 1925.—The results of experiments with various methods of planting cane, as in the case of previous experiments, showed that close planting gave the best results, the yield of cane and sugar being heaviest where the rows were 4½ feet apart. The claim that planting on the square results in larger yields has not been borne out by experience. In an experiment in which 1 plot was treated with pulverized limestone at a rate equivalent to 1 ton of burnt lime per acre and another plot with burnt lime at the rate of 1 ton per acre, the pulverized-lime plot gave a yield of 33.7 tons of cane per acre, the burnt-lime plot 29.3 tons, and the 2 control plots averaged 27.6 tons per acre, or an increase of 4.4 tons in favor of the plot treated with pulverized lime as compared with that treated with burnt lime and 6.1 tons more than the untreated plots.—*Nellie E. Fealy.*

2158. Anonymous. **Cassava and power alcohol.** Australian Sugar Jour. **6:** 349. 1925.—Among the exhibits at the Royal National Show were specimens of power alcohol and flour made from cassava, and of tubers of this plant weighing about 30 pounds. The variety of cassava richest in starch is not always the heaviest yielder; while the percentage of starch varies from 37.5 to 29.6%, the average root yield of different varieties ranges from 18 to nearly 22½ tons per acre. Cassava roots can be sun-dried after being put through a chaff or root cutter; they then furnish excellent food for pigs and other stock, and keep indefinitely.—*Nellie E. Fealy.*

2159. Anonymous. **Cotton growing in the British Empire.** Nature **116**: 629. 1925.—This is a review of several papers.—*O. A. Stevens.*

2160. Anonymous. **Herbert River Show cane exhibits.** Australian Sugar Jour. **17**: 307. 1925.—The best stool of plant cane exhibited was one of Badila, which comprised 19 sticks 7½ feet long without top. Badila also made the best showing for the best 6 sticks and for the best single stool, this stool containing 22 sticks of splendid uniform size and length. The best 3 stools were 1 each of Badila, H. Q. 409, and Goru.—*Nellie E. Fealy.*

2161. Anonymous. **Imperial Press Delegation. Souvenir from the Australian Sugar Producers' Association Ltd.** Australian Sugar Jour. **6**: 367–368. *17 fig.* 1925.—The souvenir gives a general review of the sugar industry, including production, area, cultivation, mills, population, wages, capital invested and other matters of interest.—*Nellie E. Fealy.*

2162. Anonymous. **Java and its sugar industry.** Internat. Sugar Jour. **27**: 460. 1925. —The present status of the Javan sugar industry, production and cost of production are briefly set forth and markets for Javan sugar indicated.—*Nellie E. Fealy.*

2163. Anonymous. **Mackay annual show.** [Daily Mercury.] Australian Sugar Jour. **17**: 257–258. 1925.—The highest C.C.S. obtained from any of the sugar cane exhibited was from a sample of E.K. 28, which gave an analytical return of 17.5. Apparently the best exhibit was a stool of Badila. This was under 18 months' growth and contained 17 sticks, all of which were particularly sturdy and none of which were under 8 feet in length. The best collection of varieties of 3 sticks each and of approved commercial value included Q. 813, 970, B. 208, Badila, Malagache, Goru, 1900, E.A., E.K., 28, H.Q. 458, and H.Q. 426. The Q. 813, was described as a good striker, quick grower, early maturer, and good disease resister. The plant crop averaged from 30 to 45 tons per acre and the C.C.S., from 15 to 17.5. The best stool of Q. 813 contained 12 sticks, all of good length and girth. For growth, etc., Badila produced some striking examples. High quality as to sugar content and growth was shown by 1900 Seedling. Malagache, another variety in favor, gave 14.75 C.C.S. The longest stick was one of Q. 813, which measured nearly 20 feet, and while it was rather thin in comparison to length it compared favorably in the thickness with other and shorter exhibits of the same variety. A heavy stick of 1900 Seedling was over 12 feet long.—*Nellie E. Fealy.*

2164. Anonymous. **Manuring and cultivation. Sugar cane and nitrogen. I.** Australian Sugar Jour. **17**: 238–241. 1925.—Fertilizer requirements for Queensland sugar lands, different mixed fertilizers, methods of application, and results obtained are discussed. Probably the most popular available compound is "Howe's Mixture," the formula for which is 11% potash as sulphate of potash; 9% nitrogen, part as sulphate of ammonia, and part as organic matter; and 7% phosphoric acid, as meatworks manure. Basic superphosphate for the phosphoric acid content and straight-cut sulphate of ammonia for the nitrogen content behaved as well as the original formula.—*Nellie E. Fealy.*

2165. Anonymous. **Power alcohol from sugar cane.** Australian Sugar Jour. **6**: 333, 337–344. 1925.—The Institute of Science and Industry's analysis of the Northern Power Alcohol Committee's proposals for the manufacture of alcohol from sugar cane, and its conclusions are given in full. In the Committee's opinion "there is great scope for the more economic manufacture of sugar and utilization of by-products in relation to the over-production of sugar cane," and the introduction of a distilling unit for the profitable utilization of even the present molasses would serve to practically demonstrate the possibility of the manufacture of alcohol from surplus cane and molasses.—*Nellie E. Fealy.*

2166. Anonymous. **Sugar cane at Isis Show. Gin Gin sugar cane display.** [Bundaberg Mail.] Australian Sugar Jour. **17**: 229–230. 1925.—The 1900 Seedling was "the outstanding variety" at the Isis District annual show, and among the "many superb varieties" at the Gin Gin exhibit this variety stood out prominently.—*Nellie E. Fealy.*

2167. Anonymous. **Sugar mill by-products in Natal.** [Sugar.] Australian Sugar Jour. **6**: 345. 1925.—Large quantities of molasses are used in the Natal distilleries, mainly in the manufacture of "Natalite," and it is coming into more general use as an animal food. The Government uses considerable in operations against locusts; there are inquiries for supplies for use in connection with a plant for a patent road macadam, and surplus molasses formerly treated as refuse and run down the streams or over the cane fields is now shipped to Italy.

Within the past few years the manufacture of cane wax as a by-product of molasses has developed into a considerable industry, and there is good demand for it, increasing quantities being used for various manufacturing purposes in England.—*Nellie E. Fealy.*

2168. Anonymous. **World's alcohol fuel production.** Australian Sugar Jour. 6: 345. 1925.—The aim has been to produce fuel alcohol from raw vegetable material through the use of very weak or highly concentrated acids. The former have been successfully used commercially to produce 20 to 30 gallons of 95% alcohol per ton of raw material, and the latter have produced 50 to 60 gallons. The production of both pure and fuel alcohol is becoming an important industry in Cuba, increasing from 36,557,187 liters in 1921 to 50,000,000 in 1922, 18,000,000 of the last mentioned quantity being converted into motor spirit. The alcohol industry comprises 37 distilleries, representing a capital investment of more than $25,000,000, largely Cuban.—*Nellie E. Fealy.*

2169. Adams, John. **Economic and systematic botany.** Canada Dept. Agric. Exp. Farms, Div. Bot. Int. Rept. 1920–1921: 107–108. 1921.—Cultural experiments were conducted with broomcorn, sunflowers, soybeans, caster oil, and hemp. Tests were made of the efficacy of "Atlas A" Weed Killer on weeds growing on paths and lawns.—*T. G. Major.*

2170. Albes, A., and O. Nolte. **Düngungsversuche mit Stickstoffdüngern auf Wiesen. [Fertilizer experiments with nitrogenous fertilizers on meadows.]** Mitteil. Deutsch. Landw. Ges. 40: 904–908. 1925.—The authors report on a continuation of previous experiments which in 1923 showed that the use of nitrogenous fertilizers on meadows was profitable. In the previous year the smallest net returns were received from the smallest applications, and the largest net returns from moderate applications. The work done in 1924 confirmed the previous work as far as the profitableness of the application of nitrogenous fertilizer is concerned, but in 1924 the smaller applications gave the largest net profits. It was found that the slower acting nitrogenous fertilizer should be applied before the beginning of vegetation, but that for the best results for the 2nd cutting ammonium sulphate or nitrate of soda should be used. Details of the harvest and the increases from the application of nitrogenous fertilizers on 29 cooperative stations are given in tabular form.—*A. J. Pieters.*

2171. Anderson, T. **Uniformity in seed testing reports.** Rept. 4th Internat. Seed Testing Congress 1924: 41–46. 1925.—A discussion is given of the great need for a uniform method of expressing results of analyses of seed samples, which would be valid for international trade and at the same time indicate the relative intrinsic value of a particular lot or bulk of seed.—*M. T. Munn.*

2172. Archibald, E. S. **Report of the Director.** Canada, Dept. Agric. Exp. Farms Ann. Rept. 1924–1925: 1–90. 1925.—A summary of reports of the work at the Central Farm, Ottawa, and at the various branch farms throughout the Dominion. Included are experiments in field husbandry, horticulture, cereals, forage crops, tobacco, apiculture, chemistry, botany, plant pathology, fiber production, and bacteriology.—*T. G. Major.*

2173. [Атавекова, А. І.] Атабекова, А. И. **Материалы к монографическому изучению нового вида культурной пшеницы Triticum persicum Vav. [Materials for a monographic study of a new species of cultivated wheat, Triticum persicum Vav.]** (English summary.) Труды по Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 15[1]: 161–198. *2 fig.* 1925.—The author gives detailed descriptions of 5 varieties of *T. persicum* Vav. based on measurements of different characters, data for which are given in the paper.—*M. Demerec.*

2174. Bass, Carroll M. **Is it possible to prevent wide variations in the germination of crimson clover seed?** Proc. Assoc. Official Seed Analysts North America 1921: 90–92. 1923.—Wide variations in germination tests of crimson clover seed constantly occur and may be due to the methods of counting broken sprouts, inadequate moisture supply, improper temperature, or other factors. Replicate samples from 5 lots of crimson clover seed sent to 5 different seed testing laboratories showed from the results reported that some laboratories consistently obtain a much higher percentage of germination and a lower percentage of broken sprouts than do others. Where there was a decrease in germination reported there was a proportionate increase in broken sprouts. Apparently, personal judgment in counting the broken sprouts in a test of crimson clover is an important factor in obtaining uniform results. From tests designed to determine the effect of varying degrees of moisture or moist-

ness of the germination blotters or substratum and temperature it was found that those lots which received the greatest amount of moisture produced more vigorous and healthy appearing sprouts, while at the same temperature (30°C.) those lots on the fairly dry blotters produced in a shorter time, less vigorous appearing but good healthy sprouts which seemed to be more durable and showed less tendency to fracture when handled. A higher percentage of germination was obtained and fewer broken sprouts in the so-called "dry" test than in the medium or the soaked, and, also, a higher germination and a lower percentage of broken sprouts was obtained at a temperature of 30°C. All results indicate that percentage of germination and broken sprouts vary with the amount of moisture present on the substratum and the temperature at which tests are run.—*M. T. Munn.*

2175. Beets, A. N. J. **Bemestingsproeven 1919/20–1922/23. [Fertilizing experiments 1919/20–1922/23.]** (English summary.) Mededeel. Proefsta. Vorstenland. Tabak **50**: 3–66. 1924.—Fertilizing experiments were carried on at a number of tobacco plantations with a variety of fertilizers such as lime, stable manure, humus from native villages, ammonium sulphate, sodium nitrate, ureum, mono- and di-acid sulphate, tobacco seed-cake, peanut cake, and bat dung to determine their influence upon yield, growth, quality, and color of the product of the tobacco plant. Other fertilizers used were nervox, dried blood, and fish-guano. The results are tabulated for each estate and the conclusions drawn favor lime for heavy soils and stable manure and dessa earth (humus from native villages).—*Cecil Yampolsky.*

2176. Brown, Edgar. **The evaluation of hard seeds.** Rept. 4th Internat. Seed Testing Congress **1924**: 99–100. 1925.—After reviewing the characteristics and occurrence of so-called "hard seed" in the Leguminoseæ the author states that the crop-producing value of hard seed depends upon the conditions under which seeding is done. Specific investigations are cited bearing upon this point. As an example of a rule for a uniform basis of consideration for value of hard seed the rule of the Association of Official Seed Analysts of North America is cited as follows: "In reporting the germination of samples of leguminous seeds, a portion of which usually remain hard at the end of the test, the actual percentage of germination should be reported and also the percentage of seed remaining hard.—*M. T. Munn.*

2177. Buchholz, Yngve. **The determination of moisture in seeds.** Rept. 4th Internat. Seed Testing Congress **1924**: 47–49. 1925.—Following a discussion of the conditions which have a special influence in the determination of moisture in seed, namely, the degree of grinding of the sample, the temperature at which the estimation takes place, and the duration of the drying process, the author gives the results of moisture determinations (1) as in seed testing, rough grinding the large seeds, and leaving whole the small seeds; and (2) in the same way as for chemical analysis. It is then proposed that the following method be adopted as international, and that it be used in all cases of international commerce in seeds: (a) For cereals and other large seed (dry weight of 1,000 grains more than 10 gm.), 5 gm. of roughly ground substance is heated for 4–5 hours in a drying oven at 103°C. (b) For small seed (dry weight of 1,000 grains less than 10 gm.), $2\frac{1}{2}$ gm. of whole seed are heated for 4–5 hours at 103°C. Parallel determinations are to be carried out in both cases. Determinations are to be made only on samples which have been forwarded in air-tight glass or other container.—*M. T. Munn.*

2178. Burt, B. C. **Crop production in India.** Nature **116**: 431. 1925.—This is a note on control of cotton-seed importation.—*O. A. Stevens.*

2179. Bussard, Leon. **Dans l'énonce de la pureté des semences ne convient-il pas d'indiquer expressément le pourcentage en poids des graines de mauvaises herbes et le nom celles qui dominent dans l'échantillon d'analyse? Quelles sont les espèces à signaler comme mauvaises herbes? [Should not the reports on the purity of seed indicate expressly the percentage by weight of weed seed and the names of those most plentiful in samples analyzed; and what species are to be described as weeds?]** Rept. 4th Internat. Seed Testing Congress **1924**: 52–54. 1925.—The author reviews the objections raised to the proposal presented to the Copenhagen Seed Testing Congress, namely, to substitute for "cultural value" or "real value" the formula: Grade equals purity times germination power divided by 100 minus percentage of weeds times 3. In order to answer the question as to what plants are to be considered as weeds, in contradistinction to which are considered as useful or cultivated plants, a questionnaire was sent to all seed testing stations. Replies from 30 stations of the world indicate that

the following species were most frequently and abundantly found: in North and Central Europe and America, *Sinapis arvensis*, *Chenopodium album*, *Plantago lanceolata* and *Rumex acetosella;* for Europe, especially but less uniformly, *Daucus carota*, *Sherardia arvensis*, *Centaurea cyanus*, *Stellaria media*, and *Prunella vulgaris;* variable in different countries, *Ranunculus*, *Vicia*, and *Galium*.—*M. T. Munn.*

2180. Carrier, Lyman. **Vegetative propagation of creeping bent and velvet bent.** Seed World **15**[4]: 17. 1924.—The author discusses the method of vegetative propagation of these grasses and describes the 2 operations connected with the vegetative planting of turf, namely, planting the nursery or increase plot, and planting the putting green.—*M. T. Munn.*

2181. Charlan, F. **Interim Report of the Officer in Charge.** Canada Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1921**: 1–56. *Illus.* 1922.—Cooperative fertilizer experiments, especially of the nitrogen group, were carried out. Selections were made for root-rot resistance. Investigations were continued in regard to the production of Canadian cigar tobacco.—*T. G. Major.*

2182. Charlan, F. **Report of the Officer in charge.** Canada, Dept. Agric. Exp. Farms Tobacco Div. Rept. **1920–1921**: 1–33. *Illus.* 1921.—Cooperative experiments were carried out with fertilizers. Experimental work indicated that Norfolk Co., Ontario, has great possibilities for the production of flue-cured and Burley tobacco. Canadian tobaccos have a higher nicotine content than American grown tobaccos of the same variety. A strain of White Burley was selected which showed resistance to root-rot. The semi-hot bed, glass covered, is the most economical and efficient type of bed.—*T. G. Major.*

2183. Charlan, F. **Report of the Officer in charge.** Canada, Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1922–1923**: 1–58. *Illus.* 1923.—Experiments were carried out on the preparation and management of seed beds, crop rotations, soil preparation, transplanting, insect and disease control, harvesting and curing methods, fertilizers, suitability of different varieties, and cost of production. Attempts to grow Maryland varieties did not give satisfactory results, particularly from the point of view of leaf texture. Tests of various resistant strains of Burley indicated that Routt's Resistant White Burley possesses the highest degree of resistance, while loss of resistance was observed in imported varieties. An improved strain of Parfum d'Italie has been developed. The use of high pressure steam in flue-curing was tested out with very encouraging results. Fertilizer experiments on a large scale were carried out in cooperation with the tobacco growers.—*T. G. Major.*

2184. Charlan, F. **Report of the Officer in charge.** Canada, Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1923**: 1–11. *Illus.* 1925.—Tests of varieties and strains of tobacco were continued at the Central Farm, Ottawa. After several years selection, one strain of the Espada × Cuban cross appears to be fixed in type. The leaf has the small size, dark green color, and slightly thick texture of the Cuban parent with the delicate aroma of the Espada. Considerable variation was noticed in Yellow Pryor, the seed of which was obtained from different sources in Kentucky.—*T. G. Major.*

2185. [Chingo-Chingas, K. M.] Чинго-Чингас, К. М. **Персидская пшница в мукомольном и хлебопекрном отношении. [Persian wheat in regard to its milling and baking qualities.]** (English summary.) Труды по Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] **15**[1]: 202–206. *1 fig.* 1925.—Summing up all the baking qualities of Persian wheat according to the formula of Saunders, the ultimate value of its baking strength may be expressed by 50 balls.—On the ground of his experiments with *Triticum persicum* the author comes to the following conclusions: (1) Persian wheat without any admixture of flour of other wheats is characterized by a low baking strength. (2) In some of its peculiarities, as for instance, softness of the crust and brown color as well as ready breaking into granulated flour when ground, Persian wheat approaches durum wheats. (3) Persian wheat possessing several high qualities, as for instance strong flintiness and hard texture of the grain, it may be successfully used for crossing purposes.—The present test was conducted with one sample obtained from Georgia and the grinding was carried out in a roller mill. Analogous results were obtained with a pure line of *T. persicum* var. *fuliginosum*, grown in Saratov and ground in a stone mill.—*Author's summary.*

2186. Chmelar, Fr. **Die Bestimmung der Sortenechtheit im Laboratorium und im Feld-**

bestande. [Determination of the botanical identity of varieties in laboratories and in experimental fields.] Rept. 4th Internat. Seed Testing Congress 1924: 204–215. 1925.—The more intensive plant cultivation becomes and the greater the utility and value of selected strains realized, the greater the necessity for guarantees of genuineness of variety and of purity. Several European States require the establishment of the authenticity and purity of varieties in field growths and also in the samples of seed. This determination is required when the identity or origin of selected varieties for exportation is necessary. The author cites the methods for determination of varieties of sugar beets and mangolds by the color of the sprouts which develop in a temperature of 15°C. under diffused light (Pieper) and of the intermediate forms by using chromatic filters (Vitek), also, Hallquist's method as used in Denmark to determine the color of the root of cruciferous plants by the color of the shoots. The various methods of determining the different varieties of potatoes (Snell, Vilmorin, and Parow), corn, wheat (Pieper method, Kondo), and barley (Holmgaard) are fully discussed. For the varieties which must be determined in the field all characteristics must be carefully studied and compiled, it being important to take the variety direct from the plant breeder and cultivate it normally for a number of years to learn thoroughly the biological qualities. Trial gardens for varieties are necessary. It is recommended that the International Seed Testing Association extend the study and unification of methods and usual standards to the determination of identity of variety and purity and eventually to the quality of varieties.—*M. T. Munn.*

2187. Davis, W. E. **The germination of lettuce seed.** Proc. Assoc. Official Seed Analysts of North America 1923: 71–73. 1924.—As a result of a study of the factors affecting the germination of lettuce seed in germinating chambers the author concludes that there are 3 fundamental factors in the germination of lettuce seed, namely, high water content, aeration, and temperature. The high water content demanded to initiate germination is a constant source of danger through its interference with proper aeration. Low temperatures are necessary because the oxygen supply, which is restricted by the seed coats, is sufficient only for germination at low temperatures.—*M. T. Munn.*

2188. Degen, A. v. **The longevity of seeds.** Rept. 4th Internat. Seed Testing Congress 1924: 139–143. 1925.—Following a discussion of longevity in seed the author refers to the frequent errors such as the oft-told tales of mummy-wheat, and the grain discovered by Desmoulins, alleged to have germinated after the lapse of 13 to 16 centuries, but critically discussed in the work of Becquerel. It is pointed out that while historic and prehistoric material is derived from excavations, tombs, museums, and old herbaria, it is not always possible to determine their age nor their origin with precision. The reports of germination of age-old seed as found in ancient tombs belong to the realm of fable. The author cites the work of Vilmorin and Becquerel as the best compilation and concludes that, "The duration of the capacity of germination is, therefore, obviously far shorter than is generally assumed on the ground of unreliable data; most of these data collapse under criticism, and we must, with Ewart, accept a period of from 150 to 250 years as the probable maximum for the duration of germination power." It is urged that seed testing stations collect, record, and preserve authentic material for future research.—*M. T. Munn.*

2189. [Dekaprelevich, L. L.] Декапрелевич, Л. Л. **К выяснению райано возделывания персидской пшеницы. Triticum persicum Vav.** [The geographical center of the culture of Persian wheat, Triticum persicum Vav.] (English summary.) Труды ио Лрикп. Вот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 15[1]: 199–202. 1925.—The author has found that the Persian wheat in a considerable diversity of varieties is cultivated not only in Georgia but also in mountainous regions of Armenia. Here this species has been cultivated for many centuries, as historical data have shown.—*Author's summary.*

2190. Dickson, J. G. **The influence of soil temperature and moisture on the germination of wheat treated with different seed treatments.** Proc. Assoc. Official Seed Analysts North America 1921: 68–72. 1923.—From the results of a series of experiments designed to explain the reason for seed injury in some parts of the country from the use of certain chemicals generally recommended, the author concludes that it is demonstrated that soil moisture is a major factor in the germination of wheat and the predisposition of the seedling to disease. The higher soil temperatures, notably above 24°C., reduced germination by 1–50%, depending

upon the condition of the seed and the organisms present. Surface sterilization of the seed with hot air, hot water, mercuric chloride, or formaldehyde resulted in higher germination, especially at the higher soil temperatures. On the other hand, the longer treatments with mercuric chloride and formaldehyde resulted in reduced germination throughout the series, but more especially at the higher soil temperatures. These severe seed treatments also increased the percentage of seedlings blighted by the wheat scab parasite at soil temperatures ranging from 12° to 28°C. Low soil moistures reduced the percentage of germination of all the samples, but more especially of the shriveled, moldy or scabbed seed. The surface sterilization increased the percentage of germination in all cases except the formaldehyde series at the low soil moistures. The germination of the formaldehyde-treated seed was greatly reduced at the lower soil moistures. Likewise, the formaldehyde treatments greatly increased the percentage of seedlings blighted by the wheat scab parasite at the low soil moistures. The results correlated with field observations help to explain the varied responses obtained when using the same seed treatment in different localities, and likewise suggest the remedy, namely, either to use seed treatments causing the least damage under the environmental conditions of the region or to sow the grain when the environmental conditions are best suited to the demands of the crop. The experiments have an important bearing upon the methods employed in making the regular viability tests in the seed laboratory, where temperature is important.—*M. T. Munn.*

2191. Digges, D. D. **Heating appliances for flue curing tobacco.** Canada, Dept. Agric. Circ. n. s. 51. *1–13. Fig 1–6.* 1925.—A comparison was made of the usual twin, brick, wood-burning furnaces, the Johnson patent curing furnace, the Beckett-Covill single furnace, the Canadian Oliver fuel oil burner and a system using high pressure steam. Single furnaces were found unsatisfactory due to their inability to distribute the heat evenly, and to their greater fire hazard. The high pressure steam, using a 30 horse power locomotive type, portable boiler, gave lower fuel costs and more uniform curings. The outfit is also adaptable to seed-bed sterilization, casing tobacco, etc.—*T. G. Major.*

2192. Digges, D. D. **Report of the Superintendent, Tobacco Station, Harrow, Ontario.** Canada, Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1923:** 22–35. *Illus.* 1925.—The fall-steamed, glass covered, semi-hot bed was found to be the most economical and efficient type. Experiments were continued with different systems of flue-curing. Tests were carried out with different varieties of the flue-cured, Burley and Green River types. Fertilizer, crop rotation and cultural tests were also made.—*T. G. Major.*

2193. Digges, D. D. **Summary of three years experiments on the Tobacco Station at Harrow, Ontario.** Canada Dept. Agric. Bull. 2nd Ser. 41. *1–22.* 1919.—This bulletin gives a discussion of results of experiments carried out in regard to the plant bed, rotations, spring preparation of soil, fall versus spring plowing for Burley, fertilizers, transplanting, cultivation and topping, seed growing, control of insects and diseases, harvesting, scaffolding versus direct curing, variety tests, domestic versus imported seed and steaming into case.—*T. G. Major.*

2194. Digges, D. D., and H. A. Freeman. **Flue-cured tobacco in Canada.** Canada. Dept. Agric. Bull. 2nd Ser. 38. *1–44. Illus.* 1920.—Part 1 deals with the methods of growing the seedlings, preparation of soil, transplanting, cultivation, insect pests, diseases, seed production, topping, suckering, harvesting, curing, steaming, and varieties.—Part 2 is a discussion of experimental work on soils and fertilizers, and part 3 of cooperative work.—*T. G. Major.*

2195. Dokken, Ivar. **Danmarks Omsaetning med Udlandet af Landbrugsprodukter og Hjaelpestoffer for Landbruget i Aaret 1924. [Denmark's foreign trade with agricultural products and by-products.]** Tidsskr. Landøkonomi **9:** 412–434. 1925.—A statistical summary with 18 tables of statistics, of Denmark's foreign trade with agricultural products and by-products during 1924.—*Albert A. Hansen.*

2196. Dorph-Petersen, K. **Examinations of the occurrence and vitality of various weed seed species under different conditions, made at the Danish State Seed Testing Station during the years 1896–1923.** Rept. 4th Internat. Seed Testing Congress **1924:** 124–138. 1925.—This is a summary of investigations previously reported in "Tidsskrift for Landbrugets Planteavl,"

Vol. 17, 1910, and supplemental material describing methods and results of recent experiments on this problem. The investigations reported show that (1) seed for seeding purposes, especially the smaller seed, often contain large quantities of weed seed, and that frequently, with well cleaned seed stocks, the potential infestation from a relatively small number of weed seed is very great; (2) cereal seed for forage purposes, and especially the cheaper chaff and cleanings, often contain many weed seed; (3) weed seed, as a rule, have a good germinating power, frequently germinating slowly during several years, and that many species (named in the tables) retain their viability for many years when stored dry as well as when lying in the soil; and (4) weed seed are not destroyed when passed through a grinding mill, as is conclusively shown by experiments, nor when passed through the digestive tracts of cows, pigs, and hens. The article is supplemented by 8 comprehensive tables.—*M. T. Munn.*

2197. Dorph-Petersen, K. **Germination tests in the laboratory and in soil of cereal seed which is not "germinating-ripe."** Rept. 4th Internat. Seed Testing Congress **1924**: 76–82. 1925.—This paper deals with exhaustive investigations of seed of cereals which are not "germinating-ripe" and the determination of the germinating power of such seed in the soil.—*M. T. Munn.*

2198. Dorph-Petersen, K. **The work of the European Seed Testing Stations 1921–24.** Rept. 4th Internat. Seed Testing Congress **1924**: 15–20. 1925.—This is a comprehensive report of the committee formed following the Third International Seed Testing Congress held in Copenhagen in 1921. The report, among other things, gives the plan of work outlined for international cooperation, and contains a discussion of the main lines of work attempted, as well as a number of special reports upon various problems. Appended to the report are 17 pages comprising 4 tables of results of analyses and tests of seed samples submitted to some 43 seed testing stations of the world.—*M. T. Munn.*

2199. Eastham, A. **The work of the Official Seed Testing Station for England and Wales.** Rept. 4th Internat. Seed Testing Congress **1924**: 12–14. 1925.—The work of the official seed testing station for England and Wales is divided into 4 main divisions, namely: (1) testing seed samples for trade purposes, including tests for merchants, farmers or other interested parties, either for informational purposes or for declarations of sale under the Seeds Act. (2) Testing of samples taken from licensed private seed testing stations or laboratories which are granted a license by the Ministry of Agriculture. In addition to the testing of these "licensed station reserve samples," collected by the official station for analysis to check the results obtained, "referee samples" of seed are sent to the various licensed stations in order that uniformity may be obtained in testing work. (3) Testing of control samples taken by inspectors in accordance with the regulations of the Seeds Act of 1920. Samples taken by inspectors are analyzed and tested at the official station and the results reported to the Ministry of Agriculture by whom the Seeds Act is administered. In this manner a check is kept upon seed sales throughout the country and an official and impartial report as to the purity and germination of seed in the avenues of trade is also furnished. (4) Investigational work having to do with seed longevity under various storage conditions, delayed germination with special reference to cereals, the cultural value of hard seed in legumes, relation between the results of field and laboratory germination results with peas, broken sprouts in sainfoin, and a study of the plumular growths in grasses, constitute the final division of work.—*M. T. Munn.*

2200. [England], Prime Minister. **English beet sugar industry.** Australian Sugar Jour. **6**: 385. 1925.—The sugar industry in England "is quite the most hopeful development in connection with agriculture." Six years ago there were 400 acres growing beet sugar, last year there were 23,000 acres, and this year there are 50,000 acres. For every hundred acres of beets grown, 10 men are employed. This year 6 new factories are being erected in England and 1 in Scotland.—*Nellie E. Fealy.*

2201. Fiske, Jessie G. **Studies of the germination of beet seed.** Proc. Assoc. Official Seed Analysts North America **1921**: 93–96. 1923.—Experiments were made to determine the cause of variations in results obtained in viability tests of table beet seed. The beet seed were subjected to different substrata for germination, to various temperatures, and continued for varying periods of time. Seed of 1 variety from 4 different sources were used. One lot was domestic seed and 3 were imported. The bolls were passed over sieves and separated into 3

sizes, large, medium and small. The types of substrata used included sand boxes subjected to greenhouse conditions, sand boxes at room temperature with no direct sunlight, sand boxes in a germination chamber with alternating temperatures between 20 and 30°C., and the ordinary method where the bolls germinate between folds of moistened blotting paper. The results show that proportionate amounts of the large, medium and small bolls should be taken from the sample of beet seed for viability tests. No great advantage was gained by substituting the sand bed for the blotter, the moistened blotting paper subjected to alternating temperatures of 20–30°C. being quicker and more suited to laboratory methods. Not more than 50 bolls should be placed on 1 blotter. A preliminary count should always be made at the end of 7 days regardless of substratum used, and the sprouts should be removed from the bolls which are replaced upon the substratum in case other sprouts appear.—*M. T. Munn.*

2202. Franck, W. J. **Germination tests at low temperature, with particular reference to seeds which are not full after-ripened.** Rept. 4th Internat. Seed Testing Congress **1924**: 59–75. 1925.—The subject of germination at low temperatures is treated from the standpoint of (1) physiologically unripe seed, and (2) seeds which are fully after-ripened. The author presents an exhaustive discussion of the phenomenon of dormancy in seeds and arranges the seeds into 2 groups; (a) Seeds in which the delayed germination is due to characters of the embryo, and (b) seeds in which the delayed germination is not inherent in the embryos, but is due to seed coat characters. Results are summarized as follows: "(1) An alternating method between 11 and 26°C. tested on a Jacobsen incubator, placed in a northern room, gave, in comparison with the ordinary alternating one between 20 and 30°C. and with other methods, higher and more constant germination figures for various kinds of seeds; (2) a temperature of about 10°C. is a perfect one and nearly always sufficient to get the highest germination results possible for Dutch-grown cereals (barley excepted) which are not fully ripe, and for some other kinds of seeds. It occurs but seldom, relatively, that the germination is delayed, notwithstanding the low temperature applied, but, where it does occur, an intensive desiccation at about 35°C. for 5 to 7 days always proves sufficient (barley excepted) to cancel the phenomenon of delayed germination; (3) a low temperature either constant at 10°C. or alternating between 10 and 20°C. is most favorable for the germination of various agricultural, horticultural, and flower seeds."—*M. T. Munn.*

2203. Franck, W. J. **Pure sowing seed, harmless and noxious impurities.** Seed World **15**[9]: 24–25. 1924.—A description of the working methods followed at the Government Seed Testing Station at Wageningen, Holland.—*M. T. Munn.*

2204. Freeman, H. A. **Report of the Tobacco Specialist.** Canada, Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1923**: 36–38. 1925.—Physical and chemical analyses of a large number of soil samples representing various types of tobacco soil in the provinces of Quebec, Ontario, and British Columbia, were completed.—*T. G. Major.*

2205. Freeman, H. A. **White Burley tobacco in Canada.** Canada, Dept. Agric. Bull. 2nd Ser. 45. *1–36. Illus.* 1921.—The chief varieties grown are Broadleaf White Burley, Standup White Burley and Johnson's Resistant Burley. Detailed instructions are given regarding the growing of seedlings, transplanting, the best type of soil, preparation of the land, rotation, manuring and fertilizing, cultivation, topping, suckering, insect pests, diseases, seed production, harvesting, curing, stripping, marketing and, in addition, miscellaneous data and statistics.—*T. G. Major.*

2206. French, G. T. **The quality of packeted vegetable seeds in Virginia during 1921.** Proc. Assoc. Official Seed Analysts North America **1921**: 57–64. 1923.—An examination of packeted vegetable seed purchased in the open market revealed wide variations in germination, cost of seed, and weight of packets.—*M. T. Munn.*

2207. Fyles, Faith. **Wild rice.** Canada, Dept. Agric. Bull. 2nd Ser. 42. *1–20. 12 fig.* 1920.—The topics discussed are habitat and distribution, botanical description, history, seed germination, cultivation, seed harvest and storage, insects and diseases, and the nutrient value as compared with other grains.—*T. G. Major.*

2208. Georgeson, C. C. **Report of the Agronomist in Charge.** Alaska Agric. Exp. Sta. Ann. Rept. 1923. *1–37. 12 pl.* 1925.—After listing the leading projects and weather conditions at the 5 stations in Alaska, the work and progress in grain crops are reviewed. Wheat,

barley, oats, and rye were grown. Several legumes were grown and Jerusalem artichockes, sunflowers, and soybeans were tested for silage. Artichokes alone were promising. Reports are given on vegetables, corn, potatoes, fruits, nursery stock, and flowers. An agricultural survey and cooperative work are reviewed.—*J. P. Anderson.*

2209. Gerlach, und Seidel. **Über die Kohlensäuredüngung der Felder.** [**Carbonic acid fertilizing of fields.**] Mitteil. Deutsch. Landw. Ges. **40**: 919–922. 1925.—Following a brief review of the controversy in regard to the value of CO_2 as a fertilizer, the authors report on new experiments conducted in 1924, in part in the open field and in part in specially constructed beds. As a source of CO_2 a commercial preparation sold as a CO_2 fertilizer was used. It was found that this preparation contained 4.5% water soluble nitrogen, 6.9% citric acid-soluble phosphoric acid, and 5.4% water-soluble potassium. In order, therefore, to eliminate the effect of this commercial fertilizer, similar amounts of the above mentioned substances were applied to the control beds. The work was carried on in a light, sandy soil, lupines were used as the indicator crop, and the harvest showed a slightly smaller yield on the beds fertilized with CO_2 fertilizer than on the control beds. The specially constructed beds were so arranged that pipes leading from cylinders containing CO_2 passed under one series of beds. These pipes were provided with openings out of which the CO_2 could seep into the soil and so into the air. Lupines and potatoes were used as indicator crops, and in neither case was any appreciable increase in yield secured from the use of CO_2.—*A. J. Pieters.*

2210. Gilmore, J. W. **"White Yolo"—A new grain sorghum.** Seed World **14**[3]: 20. 1923.—The article, which is splendidly illustrated, describes the origin of White Yolo, a new variety of grain sorghum, and discusses its suitability and value in the interior valleys of California. White Yolo really was obtained from natural crosses between White milo and feterita. Its chief claim to value is in the remarkable uniformity in height which it ordinarily displays. This uniformity in height allows of its being harvested with machinery, thus reducing the cost of putting the threshed grain in the granary. The cost of harvesting White Yolo with machinery is said to be about $3.00 per acre, while in harvesting it by hand the cost is estimated at $10.00 per acre.—*H. N. Vinall.*

2211. Goss, W. L. **The germination of Kentucky bluegrass seed in blotters, bell-jars, and petri dishes.** Proc. Assoc. Official Seed Analysts North America **1921**: 119–120. 1923.—The pure seed of Kentucky bluegrass was tested in 4 different ways, namely, on top of blotters in the chamber at 20–30°C., between blotters in the chamber at 20–30°C., under bell-jars kept in the chamber at 30°C., for 6 hours of mid-day and in the room at approximately 20°C. during the remainder of the day, and in Petri dishes kept in the same conditions as the bell-jars. The blotter tests were kept 6 hours at 30°C. and 18 hours at 20°C. The results indicate that correct alternation without light gives better results than a less favorable alternation with light. There is little difference in germination on top of the blotters, between the blotters, and under the bell-jar, but the Petri dishes gave consistently lower germinations.—*M. T. Munn.*

2212. Hansen, A. A. **Recent Indiana weeds.** Proc. Indiana Acad. Sci. **38**: 293–295. 1922 [1923].—Weeds troublesome in Indiana are in most cases introduced species; only 2 of the 19 weeds designated as noxious by the Indiana Seed Law are native plants. The following recent species are recorded, with notes: *Sonchus arvenis* L., *Centaurea maculosa* Lam., *Lepidium draba* L., *Richardia scabra* L., *Hydrocotyle rotundifolia* Roxb., *Carduus crispus* L., *Bromus carinatus* Hook. & Arn., *Phacelia purshii* Buckl., *Capriola dactylon* (L.) Kuntze, *Holcus halepensis* L., *Grindelia robusta* Nutt. and *Andropogon sorghum* var. *drummondii* Hack.—*Edwin J. Kohl.*

2213. Hansen, A. A. **Wild corn, a serious weed in Indiana.** Proc. Indiana Acad. Sci. **38**: 295–296. 1922 [1923].—The weed, *Andropogon sorghum* var. *drummondii*, is confined to southern Indiana in regions of overflow of the Wabash and Ohio Rivers. Dispersal is by means of overflow water in bottom lands. The weed is hard to distinguish from corn in the seedling stage. Control by cultivation is difficult on this account. Crop rotation is not hopeful since only corn is grown on overflow land. The introduction and acclimatization of the sorghum midge which attacks wild corn is suggested but the probable attack upon sorghum is pointed out.—*Edwin J. Kohl.*

2214. Henry, Helen H. **The identification of the seed of alfalfa from Argentina.** Proc. Assoc. Official Seed Analysts North America **1921**: 49–55. 1923.—This paper, to which there are appended 13 valuable and concise tables and 1 plate showing cuts of typical and characteristic weed seed, is intended to aid seed analysts in determining the origin of alfalfa seed, particularly from certain regions and countries. The author has compared the combination of frequently occurring incidental seed in Argentine seed with the combination of frequently occurring incidental seed in domestic seed, and in seed from South Africa. There are named and illustrated certain incidental seed that occur only in the Argentine seed, and not found from any of the other sources mentioned. The author cautions that further experience may add to the list or may eliminate some of them. The kinds named are *Chenopodium hircinum*, *Kochia hyssopifolia*, *Grindelia* sp., *Sporobolus rigens*, *Chaetochloa globulifera*, *Chaetochloa geniculatus*, *Panicum* sp., *Cassia* sp., *Onogra* sp., one belonging to the Leguminoseae and an undetermined specimen.—*M. T. Munn.*

2215. Hillman, F. H. **Report on study of origin of alfalfa and red clover seed.** Proc. Assoc. Official Seed Analysts North America **1923**: 46–48. 1924.—A study of alfalfa and red clover seed occurring in the American market from all regions of production, which shows the kinds of weed seed distributed by these seed, and also that under favorable conditions the region of production of seed of alfalfa or red clover may be determined with reasonable assurance. The question of accuracy of stated origin of seed may be determined by reference to accumulated data furnished by the examinations of many samples of known origins. Authentic samples, of sufficient size, of domestic and foreign origin were thoroughly examined and all impurities recovered and studied. It was found that some seed exported from France had been grown in Italy. Most of the Turkestan alfalfa seed was exported from Hamburg during a long period prior to the war. Some samples proved to be mixtures of seed from different regions. It is maintained that cooperative work and general accuracy would be materially advanced if investigators would publish from time to time the complete botanical analyses of samples examined and include accurate illustrations of all seed which they are unable to name.—*M. T. Munn.*

2216. Hite, Bertha C. **Effect of storage on the germination of bluegrass seed.** Proc. Assoc. Official Seed Analysts North America **1921**: 97. 1923.—Seed of hand-threshed Kentucky bluegrass was put to germinate on the day of gathering and at intervals of a week for several months. A portion of the seed was also put in a dry, electrically heated oven at 40°C., the day of gathering and likewise put to germinate at intervals of 1 week with the room-stored seed. Seed put in at successively later periods showed a progressive increase in the amount of germination in 14 days. Storing the seed at 40°C. seems to increase the rate of germination during the first few weeks of storage. However, the final germination of the samples, which varied from 73 to 93% did not show consistent differences in favor of any of the treatments. Gathering the seed from the plant when immature or when fully ripe did not seem to affect its viability, but ripening on the plant is more rapid than the after-ripening which takes place during storage. For the samples stored 1–2 weeks after gathering, putting the sample in the light a part of the day hastened the germination, but after the seed had after-ripened this difference could not be observed. Canada bluegrass shows the same changes as Kentucky bluegrass in the rate of germination as after-ripening progresses, also, the rate of germination during the first weeks of storage is increased by storing at 40°C.—*M. T. Munn.*

2217. Holmes, F. S. **Observed variations of duplicate germination tests.** Proc. Assoc. Official Seed Analysts North America **1923**: 40–42. 1924.—This is a statistical study of the variations which occur between duplicate germination tests and deals with their measure or extent and not with causes.—*M. T. Munn.*

2218. Hopkins, Elizabeth F. **Some experiments with a new substratum used in germination testing with observations on moisture relations.** Proc. Assoc. Official Seed Analysts North America **1921**: 118–119. 1923.—Seed of certain grasses which require much moisture during germination were tested for viability by placing the seed upon plaster of Paris blocks in a closed chamber and in which there was enough water to wet the bottoms of the blocks sufficiently, water passing through the blocks to keep them moist at the top. While this device proved no better than the alternating chamber method commonly used for the grasses it was

clearly demonstrated that the moisture requirements of the seed of grasses are rather exacting and cannot be neglected if dependable results are to be secured.—*M. T. Munn.*

2219. Hopkins, Elizabeth F. **The behaviour of hard seeds of certain legumes when subjected to conditions favourable to germination.** Proc. Assoc. Official Seed Analysts North America **1921:** 46–48. 1923.—Studies were made of the hard seed of alfalfa, alsike, red and sweet clover and of the effect of sulphuric acid and abrasion by sand paper upon germination of hard seed. The author concludes that analysts should report the percentage of seed which sprout at the end of the regulation test period and also report the percentage of so-called hard seed. The buyer or planter can then choose upon the basis of the use he wishes to make of the seed stock.—*M. T. Munn.*

2220. Hopkins, E. S. **Interim report of the Dominion Field Husbandman.** Canada, Dept. Agric. Exp. Farms, Div. Field Husbandry Rept. **1920:** 1–20. *3 fig.* 1921.—Results are given of experiments on the cost of producing oats, hay, ensilage corn and mangels, and on the value of farm manure and commercial fertilizers in a 4-year rotation of mangels, oats, clover hay and timothy hay.—*T. G. Major.*

2221. Hopkins, E. S. **Interim report of the Dominion Field Husbandman.** Canada, Dept. Agric. Exp. Farms, Div. Field Husbandry Rept. **1921:** 1–22. *9 fig.* 1922.—Studies were conducted on the yield and cost of producing oats, hay, ensilage corn, and mangels, the labor requirements of farm crops, sweet clover, grain yields, corn versus sunflowers, crop rotations. manure and commercial fertilizers, and the soil moisture problem on the prairies.—*T. G. Major.*

2222. Hopkins, E. S. **Report of the Dominion Field Husbandman.** Canada, Dept. Agric. Exp. Farms. Div. Field Husbandry Rept. **1922:** 1–21. *6 fig.* 1923.—Cost of production, rotation, and fertilizer studies were continued. Sweet clover was found to be unsuitable for Eastern Canadian conditions as a hay crop. Two years' experimentation indicates that corn is superior to sunflowers as a silage crop.—*T. G. Major.*

2223. Hopkins, E. S. **Report of the Dominion Field Husbandman.** Canada, Dept. Agric. Exp. Farms, Div. Field Husbandry Rept. **1923:** 1–24. *8 fig.* 1924.—The work included cost of crop production, comparison of sweet clover with common hay crops, yields of home grown and New Brunswick seed potatoes, crop rotations and farm manure and fertilizer studies.—*T. G. Major.*

2224. Hopkins, E. S. **Report of the Dominion Field Husbandman.** Canada, Dept. Agric. Exp. Farms. Div. Field Husbandry Rept. **1924:** 1–33. *10 fig.* 1925.—Tables are given of the precipitation and temperature records from 1890 to 1924 and the sunshine record from 1898 to 1924 at Ottawa. An explanation is given of the factors considered in cost of crop production studies. Methods of controlling weeds are briefly discussed. Investigations have been commenced on the improvement of silage from legume crops. In summer fallow experiments at Swift Current, Saskatchewan, in the spring of 1924, it was observed that less than $\frac{1}{4}$ of the total precipitation received for the previous 12 months had been conserved by the soil.—*T. G. Major.*

2225. Hume, A. N. **Fowlds' hull-less oats.** South Dakota Agric. Exp. Sta. Bull. 205. *615–628. 2 illus.* 1924.—Fowlds' hull-less selections vary considerably in yield, stiffness of straw, and amount of protein, and in these characters are notably below the best hull-bearing varieties, for example, Sixty Day and Swedish Select. Selections are continued, and an appendix of precipitations at the testing sub-stations is given.—*E. J. Petry.*

2226. Hume, A. N. **Varieties of corn for South Dakota.** South Dakota Agric. Exp. Sta. Bull. 204. *599–612. 8 illus.* 1923.—Yields of 14 tested varieties of corn, and other characters of 20 varieties are given. Merits of an "All Dakota" corn, bred by the writer, are discussed, and an appendix of precipitations at the testing sub-stations is given.—*E. J. Petry.*

2227. Hume, A. N., E. W. Hardies, and C. Franzke. **Growing flax in South Dakota.** South Dakota Agric. Exp. Sta. Bull. 213. *1–24. 8 fig.* 1925.—Past market demand, prices, tariff, and the outlook of production and needs are discussed. Flax growing methods in South Dakota, with adapted varieties, are given, together with dates for planting best suited to the regions of the sub-stations. Rates of seeding and mixture with wheat are recorded, showing that the mixture gives the highest yield of salable crop, which, at present prices, is most profitable. Precipitation tables for the sub-stations are appended.—*E. J. Petry.*

2228. Hunter, C. J. **Supplementary report on alcohol contents of megass.** Australian Sugar Jour. **17**: 209, 211. 1925.—Certain authorities give the lowest alcohol content of sugar cane as 17 gallons and the highest as 23 gallons per ton, and that of megass as 40–50 gallons to the ton, which is equal to 9–10 gallons per ton of cane. This is mainly in the form of cellulose, which is convertible into starch and then into alcohol, and if it is found possible to treat the various forms of starch and sugar in megass at a cost that will show a fair margin of profit it will be found possible to treat the sugar cane in the northern area profitably for alcohol with a far smaller percentage of molasses. It is suggested that certain low-grade syrups be sent with the molasses to central distilleries, and that cane production be so increased as to allow the first 50% of the crushings from each mill to be manufactured into white sugar and the second 50% to be sent with the molasses to the distilleries for the manufacture of power alcohol, thus preventing the manufacture of surplus sugar, eliminating the cost of double transport and refining, etc. "With the advent of a power alcohol industry established in conjunction with the sugar industry, this hitherto obstacle should become the very foundation of a new combination."—*Nellie E. Fealy.*

2229. Hutchinson, R. J. **Interim report of the Chief Officer.** Canada, Dept. Agric. Exp. Farms., Div. Econ. Fibre Production **1920–1921**: 1–8. *2 fig.* 1921.—The experimental work included machinery trials, variety tests, commercial scutching tests, binder twine and retting experiments, the recovery of flax tow and production of fiber seed for export.—*T. G. Major.*

2230. Hutchinson, R. J. **Report of the Chief Officer.** Canada, Dept. Agric. Exp. Farms, Div. Econ. Fiber Production **1921–1922**: 1–11. *1 fig.* 1923.—Varietal tests with flax and hemp were carried out at Ottawa and at several of the branch farms. Trials were conducted of the Van Allen de-seeding machine, Vessot flax lifting machine, Boby scutching machine, Vessot flax puller and Shaw tow scutcher.—*T. G. Major.*

2231. Hutchinson, R. J. **Report of the Chief Officer.** Canada, Dept. Agric. Exp. Farms. Div. Econ. Fiber Production **1924**: 1–17. *1 fig.* 1925.—Varietal and cultural experiments with flax and hemp were continued as in previous years. An investigation of the relative value of home grown and imported flax seed was undertaken. Tests of the Vessot flax puller and Boby scutching machine were again conducted.—*T. G. Major.*

2232. Jenkins, Basil. **Cornish marl extra-late-flowering red clover.** Jour. Ministry Agric. Great Britain **31**: 463–466. 1925.—A late blooming strain of red clover has been grown for many generations on the uplands of the northwest coast of Cornwall, having unusual persistence in the whole 3–4 years of the customary duration of the leys, some crops having been known to last 10 years and individual plants for longer periods. The strain has retained its purity over this long period of time because of the isolated position; but little late-flowering red clover from other districts is sown in Cornwall, and the manner of saving seed has brought about a continuous mass selection. While the outstanding qualification of the strain is its ability to persist for a longer time than any other kind of red clover except Montgomery red, it also appears to resist drought unusually well, has a considerable amount of resistance to anthracnose (*Gloeosporium caulivorum*) and possibly other diseases, and tolerates sour soils quite successfully. An organized effort is being made to produce good quality, well-cleaned seed of this strain in ample quantities to market through an association.—*M. B. McKay.*

2233. Kondo, M. **Investigations of agricultural seeds with special reference to conditions in Japan.** Rept. 4th Internat. Seed Testing Congress **1924**: 121–124. 1925.—The author points out the necessity for seed testing in its various phases, but explains that owing to the limited needs of each farmer in Japan, in the form of a small amount of a number of kinds of seed, seed testing is yet in its infancy in Japan. With the coming of co-operative buying on a larger basis it will be possible to have seed stocks tested and thereby improve their quality. Intensive investigations have been made of some 38 kinds of seed enumerated by the author. It is stated that in addition to a study of external characters, purity analyses and viability tests, it is necessary that seed testing laboratories or stations study the seedlings both from the botanic and agronomic standpoints.—*M. T. Munn.*

2234. Lazarkevitch, N. A. **Le lin: Sa culture et son industrie dans l'Europe occidentale. [Flax: Its culture and manufacture in western Europe.]** *407 p. Pl. 1–5, fig. 1–158.* Gauthier-

Villars et Cie: Paris, 1925.—This is the first French edition of the book in Russian published by the Central Association of Russian Flax Growers. The first part, Flax culture, discusses climate and soil, the place of flax in crop rotations, preparation of the soil, seed and seeding, attention during growth (including protection against meteorological risks, weeds, animal pests and diseases), harvesting, removal and cleaning of the seed, and the yield.—The other parts of the work take up, respectively, preparation of the fiber, the world output of flax, the flax industries of the world, markets and openings, surveys, and devices for retting and scutching flax.—A bibliography is appended.—*Frederick V. Rand.*

2235. Leggatt, C. W. **Investigations with rice seed.** Seed World **14**[5]: 20–21. 1923.—Germination experiments on the seed of wild rice (*Zizania aquatica*) showed that a satisfactory test can be obtained if the seed or sample is properly packed when sent, so as to be kept thoroughly wet in transit. The seed for testing should be placed in mud at a depth of about 2 inches and submerged. The dish should be from 4 to 6 inches in diameter, to hold 50 seed. The test should be carried out at a temperature of 18–20°C. and for about 14 days.—*M. T. Munn.*

2236. Lochhead, A. G. **Preliminary studies in flax retting.** Canada, Dept. Agric. Exp. Farms, Rept. Dominion Agric. Bact. **1924**: 17–18. 1925.—Preliminary studies were made on the effect of temperature on the retting process, both as regards time to complete the ret, and the strength and spinning values of the resultant fiber. Tests were also carried out on the "Kayser Process."—*T. G. Major.*

2237. Lute, Anna M. **A special form of delayed germination in wheat.** Proc. Assoc. Official Seed Analysts North America **1923**: 23–28. 1924.—A study of the contributing factors to delayed germination showed that (1) late plantings may produce seed of low viability, but there appears to be no delay in germination; (2) seed from plantings which were frosted before they were perfectly ripe showed a low germination; (3) seed from plantings grown with a high water table showed that apparently there is no delay in germination due to high water table; (4) altitude may be a slight factor; and (5) as an indication of the effect of alkali it was found that no matter what the source of the seed, wheat grown at Fort Collins was typical in appearance and behavior, while wheat grown in the San Luis Valley (some alkali present) was normal or yellow berry in appearance according to the variety, and all showed a special delay in germination. Germination tests made upon separations from samples which contained a high percentage of yellow berries showed that the more changed the appearance the greater the delay, but that even seed which have a normal flinty appearance show a delay beyond the usual period of after-ripening. The author concludes that the principal cause of this special delay in the germination of wheat produced in the San Luis Valley is excess of either potassium or sodium salts in the soil. This delay in germination responds to the cool or low temperature treatment recommended for new wheats, and since it disappears entirely before the spring planting season it is essentially a laboratory and not a field problem.—*M. T. Munn.*

2238. Lute, Anna M. **Some notes on hard seeds in alfalfa.** Proc. Assoc. Official Seed Analysts North America **1921**: 40. 1923.—Experiments designed to show what becomes of impermeable alfalfa seed when planted in the field, were made by collecting the hard seed by the moist blotter method and planting them in the field beside plantings of commercial samples. Of the 5 types of alfalfa used the data obtained lead the author to conclude that in Colorado some impermeable alfalfa seed get into the stand of plants, and that seed which do not come up within 2 months fail to get into the stand.—*M. T. Munn.*

2239. Lute, Anna M. **Weed seeds in California cereals.** Proc. Assoc. Official Seed Analysts North America **1921**: 56–57. 1923.—An examination of 200 samples of California grown barley, wheat and oats for characteristic weed seed, to aid in determining origin, lead the author to conclude that the occurrence in cereals of seed of *Brassica campestris, Phalaris paradoxa* or *Hemizonia luzulaefolia* and *H. corymbosum* rather definitely indicate California origin; that the occurrence in combinations of *Lolium temulentum, Eremocarpus setigerus, Sida hederaceae, Silene gallica* and *Medicago hispida*, indicate California origin; and that the occurrence of *Melilotus indica* points to California or its near neighbors on the southeast as the place of origin.—*M. T. Munn.*

2240. McGovern, P. **The increased net returns possible from a more extensive use of artificial manures in the Irish Free State.** Jour. Dept. Lands and Agric. [Ireland] **25**: 121–131.

2 fig. 1925.—The consumption of artificial manures is much smaller per unit area than in France, Germany, Denmark, and Belgium. Grass lands are deteriorating but can be improved by a dressing of basic slag. Root crops, cereals, and hay are also benefited by artificial manures.—*Donald Folsom.*

2241. Macoun, W. T. **The potato in Canada; its cultivation and varieties.** Canada, Dept. Agric. Bull. 90. 1–100. *Illus.* 1918.—While yields as high as 700 bushels per acre have been obtained in experimental plots, the average for Canada over a period of 10 years is about 161 bushels. Seed from a cool, moist climate gives a higher yield than that from a warmer, drier one. A crop of 200 bushels of tubers removes from the soil approximately 40 pounds of nitrogen, 20 pounds of phosphoric acid, and 70 pounds of potash. Manure is most efficient when applied to clover in the autumn preceding the planting of the potatoes. When used, chemical fertilizers should be applied at the rate of 500 to 800 pounds per acre in the proportion of 250 pounds of nitrate of soda, 350 pounds of superphosphate, and 200 pounds potash.—Information is also given regarding the best methods of cultivation and harvesting, control of insect pests and diseases. Tables are included of the varietal recommendations for different districts, a group classification of varieties, and a list of varieties tested at the Central Experimental Farm, Ottawa.—*T. G. Major.*

2242. [Mal'tsev, A. I.] Мальцев, А. И. **Джонсонова трава или гумай, как опасный сорняк суданской травы.** [**Johnson Grass, a noxious weed in Sudan grass.**] (English summary) Труды по прикл. Бот. и селекции [Bull. Appl. Bot. & Plantbreed.] **14**[1]: 280–292. *5 fig.* 1924.–1925. [1925].—The author gives a detailed description of *Andropogon halepensis* (L.) Brot., which might prove a dangerous pest for Russia in case it should be spread through seed of Sudan grass introduced from America.—In Russia Johnson grass is found only in Transcaucasia and in Central Asiatic Republics.—*M. Demerec.*

2243. Montreuil, J. E. **Report of the Superintendent, Tobacco Station, Farnham, Quebec.** Canada, Dept. Agric. Exp. Farms, Tobacco Div. Rept. **1923**: 12–21. *Illus.* 1925.—Varietal tests with pipe and cigar filler tobaccos were continued. Fertilizer experiments were conducted at the Station and fertilizer demonstration plots were located on the farms of several cooperators. Owing to the unfavorable season the results were not altogether satisfactory.—*T. G. Major.*

2244. Munn, M. T. **Testing lawn grass seed mixtures.** Proc. Assoc. Official Seed Analysts North America **1921**: 145–146. 1923.—Tests upon samples of lawn grass seed mixtures show that the results obtained as to percentage composition of the components vary widely, and that the variations in analyses are not covered by the tolerance formula for unmixed seed.—*M. T. Munn.*

2245. Munn, M. T. **The practical value of germination tests of certain seeds and some factors affecting the test.** Proc. Assoc. Official Seed Analysts North America, **1921.** 78–80. 1923.—Methods of testing and of reporting are discussed from the viewpoint of making these tests of the greatest practical value.—*Author.*

2246. Munn, M. T. **The work of the Association of Official Seed Analysts of North America, 1921–24.** Rept. 4th Internat. Seed Testing Congress **1924**: 110–112. 1925.—A summary of progress during 4 years, showing plan and method of "certification" of American seed testing laboratories in the North American association. Following a discussion of seed testing methods in America there are given the outstanding lines of research undertaken, namely, hard-seed problems, vegetable and flower seed germination, longevity, seed-borne diseases, effects of frost and freezing, seed disinfection, and fundamental studies of germination processes.—*Author.*

2247. Munn, M. T. **Work of the official seed analysts of North America, 1921–1924.** Seed World **16**[5]: 26–27. 1924.—A paper presented before the International Seed Testing Congress at Cambridge, England, July, 1924.—*Author.*

2248. Munro, C. G. **Sugar cane for power alcohol.** Australian Sugar Jour. **17**: 232. 1925.—As it is becoming increasingly difficult to get rid of the cane tops and trash because of the extra amount of cane left on the top when cutting, the top half of the cane stalk being generally lower in sucrose than the lower portion, and as glucose is of no use to the miller except for molasses but is useful for distilling into alcohol, the author believes that the upper

⅓ and the lower ⅔ of the cane stalks should be separated when harvesting. His plan for accomplishing this object is described and suggestions are made for handling the low-purity juices for alcohol purposes.—*Nellie E. Fealy.*

2249. Murray, J. C. **Southern field assistant's report.** Australian Sugar Jour. 17: 301–302. 1925.—A list of the varieties of sugar cane making the best showing in the various regions is given. Mosaic disease and root rot occurred on most farms in the Gin Gin areas; leaf stripe, mosaic, and foot rot in the Bundaberg sub-districts on farms back from the river; and gumming was present in several blocks of D. 1135 in the Childers district, and showed in striped Singapore in Maryborough.—*Nellie E. Fealy.*

2250. Neumann, Hans. **Die Beeinflussung der Kartoffelknolle durch aüssere Verhältnisse. [The influence of external factors on potato tubers.]** Jour. Landw. 73: 7–38. 1925. —Increase in weight of the potato is correlated with increase in length. Fertilizers influence the form of the potato; N causes the potato to lengthen; K and P fertilizers and increased moisture cause the tubers to thicken. A well aerated soil is believed to produce short potatoes. Sandy soils tend to produce a short potato while heavy soils produce longer ones. Stable manure produces shorter potatoes than those unfertilized. A correlation has been found between long cylindrical forms and low starch content and short forms and high starch content. The size of the lenticels is increased by a greater water supply.—*F. M. Schertz.*

2251. New York (State). **List of organizations pertaining to agriculture in New York state. Also a list of national organizations.** Dept. Farms and Markets, Div. Agric. Bull. 171. *1–58.* Albany, 1924.

2252. Oldershaw, A. W. **Silage crops.** Jour. Ministry Agric. Great Britain 31: 640–647. 1924.—Experiments and experience on the use of different materials are given, including beans and peas, lucerne, sainfoin, clover, and seed mixtures; peas and oats, sunflowers, maize, grass and some mixtures of winter vetches; and oats, rye and wheat for silage purposes.—*M. B. McKay.*

2253. Pack, Dean A. **Time of year to plant mother beets for seed production.** Jour. Agric. Res. 30: 811–818. *Pl. 1–4.* 1925.—It was found that successful seed production was correlated with root and stalk development, these in turn varying with temperature. At temperatures from 15 to 20°C. root development was favored and stem development retarded while at temperatures above 20°C. the reverse was the case. This temperature relation explains why early planted mother beets produce abundant seed and good quality while similar mother beets planted late in the season produce little seed of poor quality.—*Author.*

2254. Pammer, G., and J. Schindler. **On the questions of hard husk in clover seed and of broken seeds.** Rept. 4th Internat. Seed Testing Congress 1924: 102–105. 1925.—The report discusses the hard seed of clover and alfalfa and the methods of estimation prevailing in Austria and Germany, together with the problem of seed injured in threshing. It is concluded that a portion of the hard seed should be added to those reported as germinating, that seed which outwardly show injury should be excluded both in purity and germination tests and that seed which in the germination test show not more than one cotyledon missing, or where the broken rootlet has been replaced by adventitious roots, should be included among those germinating.—*M. T. Munn.*

2255. Petree, C. G. **Brighter prospects for the Natal sugar miller. An effective method of making refined sugar at the plantation.** South African Sugar Jour. 9: 513–521. 1925.—The author discusses the unsound policy of manufacturing raw sugar in one part of the country and shipping it to another part to be refined, which necessitates the expense of handling and paying transportation on the impurities in the 1st place, and the rehandling and remelting in the 2nd place. This policy, he claims, is no longer necessary, as refined sugar can be manufactured where the cane is grown and crushed. The cheapest and best means of removing the major portion of the color and objectionable impurities is by crystallization and subsequent purging in the centrifugal baskets; the rest is easily accomplished by means of the Suchar Process, in which is included the most powerful activated vegetable carbon yet produced for the sugar industry, special apparatus for its electrical generation and also its application to filtration and recovery in refining. In this way standard granulated sugar equal to the best product of the bone-black system can be manufactured. The Suchar Process is described, its economics and results discussed, and testimonials as to its worth are quoted.—*Nellie E. Fealy.*

2256. Petry, E. J. **Weeds and their control.** South Dakota Agric. Exp. Sta. Bull. 211. *1–84. 46 fig.* 1924.—Kinds and amount of weed damage, fundamentals and methods of control, and keys to weed-containing families, for school uses are given, also detailed methods of control for 55 of the most noxious weeds of the state, with figures and descriptions of 3 economic plants for comparison, and common and scientific names with synonyms. A brief list of the larger floras and weed bulletins is appended.—*Author.*

2257. Pieters, A. J. **Italian red clover seed.** Proc. Assoc. Official Seed Analysts North America **1921:** 100–101. 1923.—The relative conditions of red clover seed production in Europe and America are discussed. Records of experiments conducted established the general statement that plants from Italian seed are more likely to winter-kill than are plants from American grown seed. This does not mean that there may not be sections where Italian seed is useful. It is urged that buyers insist on knowing the origin of the seed.—*M. T. Munn.*

2258. Pieters, A. J., and L. W. Kephart. **A method to determine whether seed is that of the annual or of the biennial white sweet clover.** Proc. Assoc. Official Seed Analysts North America **1921:** 102. 1923.—The seed of the annual and the biennial white sweet clover cannot be distinguished, one from the other, but it was found that the seedlings of the annual type were long, with elongated internodes, while the biennial seedlings were short, tending, in extreme cases to have scarcely any stem. About 50 days after the seed was sown the average internode length of the annual plants with 4 and 5 leaves was 9.04 mm., that of the biennial plants with 4 and 5 leaves was 2.458 mm. These facts may be of use to seed analysts and seedsmen in determining whether any given lot of white sweet clover seed is that of the annual or biennial type.—*M. T. Munn.*

2259. Priestly, J. H., and G. C. Johnson. **The cutting of potato sets.** Jour. Ministry Agric. Great Britain **31:** 1012–1021. *5 fig.* 1925.—Many potato growers in Britain hesitate to use cut potatoes for seed, chiefly because they fear a large proportion of missing plants due to rot of the cut seed piece.—Conclusions from tests in laboratory and field are that sets cut and protected from drying wind are not more liable to missing hills than whole sets and the certainty of growth is much greater and the yields are better if the cut sets are protected from sun and drying wind than if they are left exposed for a few hours to sun and drying air.—*M. B. McKay.*

2260. Rodriguez, G. **Study of influence of heat and cold on germination of hard seeds in alfalfa and sweet clover.** Proc. Assoc. Official Seed Analysts of North America **1923:** 75–76. 1924.—From a study of the effect of freezing and thawing which seed undergo in the soil during winter and spring, the author concludes that freezing stimulates the germination of many hard seed, but may destroy the vitality of some normally germinating seed. Soaking prior to freezing increased the germination of hard seed. Under equal conditions neither the length of time of soaking before freezing and thawing nor the different kinds of substrata affected very materially the germination of hard seed. Hot water treatment rendered the hard seed capable of absorbing moisture, but killed many of them.—*M. T. Munn.*

2261. Safford, W. E. **The potato of romance and of reality.** Jour. Heredity **16:** 174–184, 217–230. 1925.—I. The statement that the potato was found growing in North America by the English colonists and carried thence to England, for which Gerard is responsible, is not true; the "openawk" of the Algonquin Indians with which it was confused by early writers is a tuber-bearing climber of the bean family, *Glycine apios* of Linnaeus.—II. The story of its introduction into Ireland by Sir Walter Raleigh is a myth invented in 1693, more than a hundred years after the return of his ill-fated colony from Roanoke Island. The Drake myth which was substituted for it is equally without foundation.—III. The cultivation of *Solanum tuberosum* in pre-Columbian times extended from southern Chile along the Andes and the highlands of Peru and Bolivia to the mountains of Ecuador and Colombia, but did not reach the shore of the Caribbean Sea. The "potatoes" encountered on the shore and islands of that sea by the early navigators were sweet potatoes.—IV. The potato was carried to Europe from South America by the Spaniards soon after 1580, thence to Italy, and in 1588 reached Charles l'Ecluse, keeper of the Botanical Garden at Vienna. It was cultivated as a field crop in Ireland before 1663. It did not reach the U. S. A. until 1719 when it was brought from Ireland by immigrants who settled at Londonderry, New Hampshire. The Irish potato reached the West Indies

after 1700, and was first propagated from seed brought from the British Isles.—V. Dried specimens and representations of potatoes in terra cotta found in prehistoric tombs show that excellent varieties had been developed before the discovery of America.—VI. Numerous species of tuber-bearing Solanums have been collected in various parts of America both north and south of the equator, but *Solanum tuberosum* itself has never been found in its wild state. Evidence as to the place of its origin points to the central Andean region where conditions of soil and climate are such that a number of plants of other families have developed tubers of a similar nature.—*R. C. Cook.*

2262. Saunders, C. B. **The source of our seed supply: with special reference to clover and grass.** Jour. Ministry Agric. Great Britain 31: 425–432. 1924.—Figures are given on the volume of imports and exports of seed in the United Kingdom for the 3 years 1920–1922. The total imports of seed amount in annual volume to about 1½ millions steriling and exports reach a total of just over ½ million sterling. Clovers bulk largely among the imported seed, the net income amounting to about 6,000 tons a year. In the case of grasses the exports usually more than counterbalance the imports in bulk. This is due to the large export of ryegrass. Usually more vegetable seed are exported than imported but the trade in flower seed and in vetches is almost entirely an import one.—Figures are given on the proportion that imported seed bears to the total requirements of the United Kingdom and the source of supply for the following individual species: red clover, alsike, white clover, trefoil, lucerne, sainfoin, birdsfoot trefoil, kidney vetch, perennial ryegrass, Italian ryegrass, cocksfoot, timothy, meadow fescue, dogstail, rough-stalked meadow grass, smooth-stalked meadow grass or Kentucky bluegrass, wood meadow grass, small fescues, bent grasses, meadow foxtail, tall and golden oat grasses, sweet vernal grass, cauliflower, beet, carrot, onion, peas and beans.—*M. B. McKay.*

2263. Schmidt, David. **Does hardness unfit seed for duty?** Seed World 16[2]: 18–19. 1924.—As part of a report to the National Research Council directing the hard seed fellowship supported by the American Seed Trade Association, the author supplements discussion of the histology of the hard seed by a report upon some preliminary experiments from which the following conclusions are drawn: Germination of sweet clover seed is increased by fall planting, as a result of the softening of some hard seed. Some alfalfa seed in the soil do survive winter conditions in a freezing climate. Clover seed sown in sand under greenhouse conditions produce 5–30% less seedlings than they do by the blotter test. Nevertheless, early spring seeding out-of-doors gives a better initial germination than does the blotter test, and notably better than seeding under greenhouse conditions. Rate of softening and germination of the hard seed was also greater in the early spring seeding than in the greenhouse or blotter test. Alternation between wet and dry conditions in defined periods seems to aid slightly in softening hard seed in sand. A temperature of 100°C. plus an excess of moisture is more effective than dry heat in softening the hard seed of red clover, alfalfa, white clover, alsike clover, and Hubam sweet clover. Neither condition affects the hard seed of white sweet clover favorably. If planted in late fall or mid-winter the total germination of alfalfa and red clover seed may be decreased, while that of sweet clover is slightly increased. If planted in early spring there is an increase in total germination of alfalfa, red clover, alsike clover, white clover, white sweet clover, and Hubam seed.—*M. T. Munn.*

2264. Schmidt, David. **Legume treatment to decrease hard seed content.** Seed World 15[6]: 22–23. 1924.—In a study of the hard seed problem under the direction of the National Research Council the author subjected the seed of alfalfa, Hubam sweet clover, and red clover to treatment with live steam without increase of pressure. The seed were enclosed in cheese cloth bags and placed in an oven under the action of live steam. The results lead to the following conclusions; (1) Different types of clover may respond differently, as may also different lots of one and the same type; (2) red clover, Hubam sweet clover, and alfalfa seem to respond most favorably; and (3) the results thus far attained with red clover, Hubam, and alfalfa indicate that the method may be of economic value with respect to those 3 legumes.—*M. T. Munn.*

2265. Schmidt, David. **The effect of winter exposure in the soil on some hard seeds.** Seed World 17[1]: 34–35. 1924.—Untreated sweet clover from a lot containing 98% hard seed

were sown December 7, 1923, and filed and soaked seed from the same lot were seeded in April, 1924. The number of plants from each seeding was recorded and the results showed that the effect of the winter had been to soften the seed so that a good stand of thrifty, well developed plants resulted.—*A. J. Pieters.*

2266. Schmidt, David. **The importance of the "hard seed."** Seed World 17[13]: 19. 1925.—This is the annual report of the work done under the hard seed fellowship provided by the American Seed Trade Association and directed by the National Research Council.—*M. T. Munn.*

2267. Schneider, K. **Grünlandwirtschaft und Grundwasserfrage.** [**Grass land management and questions of ground water.**] Mitteil. Deutsch. Landw. Ges. **40**: 866–868. 1925.—The author urges the lowering of the ground water level on pastures and meadows to a depth of at least 1.2 m. Feed grown on dry soil is of higher quality than that grown on damp or wet ground. Cattle always eat first the growth on the drier parts of a pasture and do not graze the wetter parts until driven by hunger. In one case a herd of cattle was grazed first on a wet pasture and during that time the fat content of the milk was only 2.8%. Later the same cattle were taken to higher ground and the fat content rose to 4.3%.—*A. J. Pieters.*

2268. Schoth, H. A. **Hungarian vetch has real value.** Seed World 14[8]: 13–14. 1923.—An account of Hungarian vetch (*Vicia annonica*) and its value in western Oregon.—*A. J. Pieters.*

2269. Scotland Bd. Agric. **Potato culture in Scotland. Report of Proceedings at Conference held in August 1924.** Bd. Agric. Scotland Misc. Publ. 5. *1–77.* 1925.—The following papers, with discussions, are included: Wood, James. Survey of the work of the Board of Agriculture for Scotland in the certification of potato stocks and the registration of immune varieties; Watson, J. A. Scott. Field trials of potato varieties; Millar, A. Field lecture and demonstration on "The classification of varieties of the potato;" Anderson, T. Field lecture and demonstration on "Practical effects of degenerative diseases and variations on potato stocks;" and Pethybridge, H. Potato diseases.—*Frederick V. Rand.*

2270. Sirrine, Emma F., and E. H. Toole. **Seed-like stone-cell bodies in commercial seed.** Proc. Assoc. Official Seed Analysts North America **1921**: 56. 1923.—Small, seed-like bodies which occur occasionally in western clover and alfalfa and which resemble closely the seed of *Cuscuta* sp., and often mistaken for them, were found to be seed-like structures composed entirely of uniform, closely-packed, stone cells. The authors noticed that these seed-like bodies were uniformly accompanied in the samples by seed of a species of *Solanum*, whereupon examination of herbarium material revealed them among seed of *S. triflorum* and also imbedded in the flesh of the fruits. Similar, but smaller bodies were found in fruits of *S. nigrum*. According to the authors, Bitter mentioned the presence of these bodies in various *Solanaceæ*.—*M. T. Munn.*

2271. Stevens, O. A. **Germination of hulled timothy seed.** Seed World 17[4]: 14. 1924—From a study of 77 samples of timothy seed received at the North Dakota seed laboratory and from which 200 each of the hulled and unhulled seed were germinated on the same blotter, the author concludes that the hulled seed germinate very nearly as well as the unhulled when the seed are new or fresh, but lose their vitality more rapidly so that seed 2–3 years old are of poor quality.—*M. T. Munn.*

2272. Stevens, O. A. **The testing of brome grass and wheat grass seeds.** Proc. Assoc. Official Seed Analysts North America **1921**: 120–123. 1923.—The "seed" (florets) of quack grass are not very similar to those of brome grass, smooth brome grass, awnless brome grass (*Bromus inermis*) of which it is a common impurity, but are frequently confused with western wheat grass (*Agropyron smithii* Rydb.) and also with slender wheat grass (*Agropyrum tenerum* Vasey). The spikelets of these 2 wheat grasses are distinguishable from those of quack grass with some difficulty, the individual florets with considerable difficulty. On account of the similarity in appearance, individual florets are difficult to detect without tedious examination. The quack grass spikelet breaks away from the stalk readily and if quack grass is present, entire spikelets or glumes will usually be found. The spikelets of slender wheat grass do not break away readily and are rarely found where the seed occur as an impurity in other crops, but they are quite common in uncleaned wheat grass seed. The spikelets of western wheat

grass break away more readily and the glumes are commonly found. All 3 *Agropyron* species are frequently affected with ergot, brome grass less commonly.—*M. T. Munn.*

2273. [Stoletova, E.] **Столетова, Е. Полба-эммер, Triticum dicoccum Schrank. [Emmer, Triticum dicoccum Schrank.]** (English summary.) Труды по Прикл Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14[1]: 27–111. *4 pl., 2 fig.* 1924–1925 [1925].—This is an extensive study on emmer which is considered by author as one of the vanishing cultures. The history of emmer culture and data on its present distribution are presented. It is pointed out that the present culture of emmer, especially in Russia, is closely related to the ethnographical composition of the population. A list of 60 characters is given, which were used by author in the study of emmers. He describes 9 races of the variety *farrum*, and 6 races of the variety *rufum.*—*M. Demerec.*

2274. Thiselton, A. E. **Sugar a basic South African industry.** South African Sugar Jour. 9: 469, 471. 1925.—A general survey is made of the Sugar Industry of Natal, a basic South African industry, and allied industries, such as confectionery, jams, canned fruits, jellies, etc.—*Nellie E. Fealy.*

2275. Toole, E. H. **A preliminary report on bluegrass germination.** Proc. Assoc. Official Seed Analysts North America 1921: 119. 1923.—The author summarizes 2 years' work on germination testing of bluegrass as follows: (1) Very few seed of either *Poa compressa* or *P. pratensis* germinate at any constant temperature tested; (2) a sharp daily alternation of temperatures, such as is obtained by transferring the tests from one chamber to another, is the first requirement for the germination of either species of bluegrass; (3) a variety of such temperature alternations is successful, but the usual 20–30°C. alternation is satisfactory; (4) a sharp temperature alternation will cause quite a portion of the seed of *Poa compressa* to germinate, but with many samples complete germination is obtained only when a suitable alternation is supplemented by both exposure to light and treatment with a 0.2% solution of KNO_3; (5) the usual sample of *Poa protensis*, while equally sensative to alternations of temperature, does not require exposure to light or treatment with KNO_3; and (6) attention is called particularly to the great variation in the germinating conditions required by different samples and by different portions of the seed of any one sample.—*M. T. Munn.*

2276. Toole, E. H. **Problems of germinating the various bluegrasses.** Seed World 14[3]: 23. 1923.—The fundamental requirement for the germination of either Kentucky bluegrass or Canada bluegrass is to subject the uniformly moistened seed to a daily sharp alternation of temperature of at least 10°C. Six hours at 30°C. and 18 hours at 20°C., is probably the best of many possible temperature alternations. Kentucky bluegrass will germinate promptly and completely under these conditions. With most samples of Canada bluegrass this fundamental requirement of temperature alternation should be supplemented by exposure to either natural or artificial light for a part of the day and also by moistening the seed with a dilute (0.2%) solution of KNO_3.—*M. T. Munn.*

2277. Toole, E. H. **Progress report on the germination of dormant wheat.** Proc. Assoc. Official Seed Analysts North America 1921: 80–83. 1923.—In a study of the probable relation of dormancy in newly threshed wheat to the stand of fall wheat this investigator found by collecting samples directly from the threshing machine in Montana (U. S. A.) and Alberta (Canada), that the occurrence of dormancy in a crop of wheat is somewhat varied and the length of the dormant period seems to vary equally as much. In a study of the conditions which determine the occurrence and degree of the dormant condition it was found that where the grain was rubbed out by hand dormancy was much greater than where it had passed through a threshing machine; also, as bearing upon this point, it was found that putting the wheat through a clover scarifier increased the germination, but seed injury and increase of the tendency to mold would prevent the use of this method in practice. The author states that in speaking of dormany of new wheat it is necessary to specify the temperature of germination, since the germination of freshly harvested wheat is greatly influenced by the temperature. From experiments bearing upon this point it was found that a temperature of 15°C. will cause all samples of dormant wheat to germinate; however, when it is impossible to maintain a chamber at 15°C. an alternative method of holding the dormant samples on moist blotters in a cool part of an ice-box for 2–5 days before germinating at 20 or 25°C. will be satisfactory for practically

all samples. When a sample has failed to give a good germination the remainder may be transferred to the cold for 5 days; if the poor results have been due to dormancy, germination will be completed after the material has been returned to the warm germinator. From the results obtained it seems evident that, for a given temperature, germination will not vary greatly whether the substratum is soil or blotters.—*M. T. Munn.*

2278. Toole, E. H. **The germination of cotton seed.** Proc. Assoc. Official Seed Analysts of North America 1923: 64–66. 1924.—Germination tests of cotton seed, especially that from Texas, gave very variable and often unaccountably low results. The author concludes that there are in cotton seed 3 distinct classes of samples: (1) Strong samples which will germinate well under a wide range of conditions; (2) samples which contain many dead or weak seed which always fail to produce healthy seedlings; (3) "sensative" samples, in which a large percentage of the seed is viable and capable of producing seedlings, although there is a tendency for the seed to succumb under unfavorable conditions of germination. It is this 3rd class of samples which present difficulties to the seed analyst. It was found that the viable seed in these "sensative samples" could be determined by testing the seed in soil with controlled moisture content and controlled temperature, often by soil tests in the greenhouse, by tests in sphagnum moss, to some extent by "pre-soaking" the seed, by surface sterilizing the seed, and simply by wetting the fuzz of the seed before putting it to germinate. It would seem that any method which will get water into the seed quickly and start germination promptly will prevent the development of mold and the decay of the sprouts. The simplest and most successful treatment of "sensative" samples was found to be a thorough wetting of the fuzz of the seed before they were put to germinate. This insures prompt germination and in most cases entirely inhibits the spread of mold and the decay of the young sprouts. In addition to the report of the standard test the result of the "pre-wetting" test is reported as "live seed." Each report is accompanied by a brief explanation of the reason for the 2 tests and their significance. The moisture content of the stored seed has been found to be an important factor in the germination of sensative samples. As the moisture content of the seed falls below 10% there is a gradual increase in the tendency of the sample to mold and decay during germination. Moreover, if the seed dries out until the moisture content is between 5 and 6%, there is a marked development of "hard seed" which fail to take up water at all. Samples stored in a heated laboratory rapidly lose moisture and give increasing difficulty in germination. The moisture content of this dry cotton seed can be raised by keeping the seed in a humid atmosphere, or by sprinkling the seed with a small amount of water and in a closed space. Under this treatment the "hard seed" are rendered capable of taking up water and the rapidity of germination is increased.—*M. T. Munn.*

2279. Toole, E. H., and W. L. Goss. **The seed analyst's interest in dormancy problems.** Proc. Assoc. Official Seed Analysts North America 1921: 90. 1923.—Viability tests of seed indicate that several kinds are more or less dormant under certain conditions, that is, they remain sound and unsprouted, though swollen, at the expiration of the period of time normally required for a germination test. The author suggests that if at the end of a test many seed of a sample remain clean and undecayed, though unsprouted, it is safest to conclude that they are dormant, and to retest, possibly including a soil test as a check, making certain that conditions are favorable.—*M. T. Munn.*

2280. Tryti, G. **New methods for the determination of the origin of seed.** Rept. 4th Internat. Seed Testing Congress 1924: 97–98. 1925.—The author points out that experiments prove that seed of Norwegian and northern-grown crops produce a higher yield than seed from southern countries. The studies of Larsen (Norway) and Nielsen (Denmark) are cited. The author explains some new methods used in Norway to determine the origin of seed.—*M. T. Munn.*

2281. Ultee, A. J. **Verslag over de werksaamheden van het Proefstation Malang in het jaar 1923. [Report of the activities of the Malang Experiment Station for 1923.]** Mededeel. Proefsta. Malang 48. *3–27.* 1923.—Directors report of the activities of the staff during 1923.—*Cecil Yampolsky.*

2282. Villagram, A. C. **Alfalfa seed culture in Argentina.** Seed World 14[6]: 20–21. 1923.—A general account of the production of alfalfa seed in Argentina.—*A. J. Pieters.*

2283. Vinall, H. N. **Honey sorgo—A good producer of fodder, silage, and sirup.** Seed World 17^{11}: 14–15. 1925.—A description of Honey sorgo and its value as a fodder, silage, and sirup crop is given in this article. The results of experiments showing its ability to make high yields and resist storms which cause other varieties to lodge are set forth. Honey sorgo is recommended as a variety which may be used to advantage for both forage and sirup production in the southern part of the sorghum-producing section of the U. S. A.—*Author.*

2284. Voigt, A. **Uber Keimprufungsmethoden. [Germination methods.]** Rept. 4th Internat. Seed Testing Congress **1924**: 192–194. 1925.—The author submitted for discussion and adoption the "General Rules or Directions for Germination Tests" proposed at the Copenhagen Congress in 1921, and further pointed out that since 1921 remarkable work has been done concerning the physiology of germination, and especially on chemical and physicochemical influences retarding or accelerating germination. Experiments along lines previously reported had been carried out and good results obtained by securing higher yields from grain soaked in $HgCl_2$, also similar results by use of the fungicides, Germisan and Uspulun. The opinion is expressed that it is not yet time to introduce these matters into practical seed testing, it being quite necessary to study the whole material for a longer time. On the other hand it is pointed out that matters directly useful for practical seed testing had been done at Zurich by Hohenheim, working with *Pinus strobus;* at Copenhagen with *Pinus strobus;* at Hamburg with *Anthoxanthum Puelii, Festuca ovina, Aira flexuosa, Cynosurus cristatus* and other plants.—*M. T. Munn.*

2285. Volkart, A. **Report on the determination of provenance of clover and grass seeds.** Rept. Fourth Internat. Seed Testing Congress **1924**: 83–97. 1925.—This is a report of the committee appointed following the Copenhagen Congress to initiate investigations into the origin of commercial seed of red clover and other seed, where origin or place where grown are important. The enquiry or plan of investigation outlined and later used by the committee consists of the careful examination of a large sample of commercially cleaned red clover seed from each producing district or distinct geographical area of any country, whether such seed is consumed locally or exported. Special stress is laid on the so-called "determining species" of weed seed found in the bulk of seed. Attention is also given to the "secondary species" of weed seed. The investigation covered (1) seed of weeds, and their numerical frequency which is indicated as "common," "frequent," "very frequent," etc.; (2) the other impurities, meaning plant parts, pieces of earth, quartz, animal residues, etc.; (3) the color of the seed, for red clover, fixed into the 5 grades, violet, predominating violet, mixed, predominating yellow, and yellow; and (4) the "thousand grain weight." This weight-test is included to strengthen other findings. Publication of results left to each participant, but uniform type of report to be used.—*M. T. Munn.*

2286. Wester, P. J. **The food plants of the Philippines.** 3rd revised ed. (Bull. Bureau of Agriculture Philippine Islands 39) Manila $x + 236$ *p., 67 pl.* Bureau of Printing: Manila, 1924.—This is a list of the food plants of the Philippine Islands, arranged alphabetically by the common name most used, together with the scientific names and the many local names that are synonyms. The book is profusely illustrated with photoengravings, and brief information is given concerning each plant as regards its habit, distribution, and the use made of it as a food. The plants listed include both the native plants and those introduced from various other countries. The book should prove most useful to everyone interested in the culture of tropical or subtropical plants.—*C. V. Piper.*

2287. Westover, H. L. **Alfalfa seed production in Argentina.** Seed World 17^{8}: 7–9. 1925.—This is a descriptive article discussing the climate, producing areas, and methods employed. Of particular interest is the fact that practically all of the seed sent to the U. S. A. is produced in 1 of the 4 regions discussed, and in a climate even less severe than that of the State of Kansas. For this reason the author concludes that until more definite information is available regarding the adapatability of Argentine alfalfa, the prospective grower should sow the seed no farther north than Kansas-grown alfalfa is known to survive the winters satisfactorily.—*M. T. Munn.*

2288. Whitcomb, W. O. **A duration test of hard seeds in alfalfa, sweet clover, and red clover, 1921.** Proc. Assoc. Official Seed Analysts North America **1921**: 41–46. 1923.—Work

done in Montana with the hard seed found in 3 legumes shows that when the so-called hard or impermeable seed are secured by the moist blotter method and placed both in a germination chamber at constant temperature of 20°C. and at 20 to 30°C. alternation, and also planted in shallow pots of soil in the field, the alfalfa has the greatest value of hard seed, red clover next in value, and sweet clover least. In other words, and from the standpoint of the first year's growth (the time which the experiments continued) it would appear that the hard seed in the alfalfa may have considerable value (30 to 50%), the hard seed in red clover a lower value (15 to 25%), and the hard seed in sweet clover for the first year a value of not more than 10 to 15%.—*M. T. Munn.*

2289. Whitcomb, W. O. **A study of methods in making germination tests.** Proc. Assoc. Official Seed Analysts North America 1921: 64–68. 1923.—In a study of the methods used in making germination tests it was found that (1) in 471 tests with field crop seed there was but little difference in the percentages of germination as secured by using either the constant or alternating temperature germination chamber; (2) the laboratory tests with 5 field crop seed averaged 16.5% higher than the corresponding field tests; the percentages of these differences were distributed as follows—Corn 4, peas 6, oats 20, wheat 24, and flax 40; (3) there was a striking similarity of results when testing newly harvested grains between folds of moist blotting paper and in moist soil; (4) testing newly harvested grain in an ice chest with alternating temperature following, showed higher average results by 40% than by any other method; and (5) field tests with newly harvested grains averaged about 10% less than the results in the laboratory when the seed were placed in an ice chest as part of the procedure. From this study the author concludes that (a) "a germination test of well aged field crop seeds in a germinator at a constant temperature of 20°C., or method giving similar results, will indicate within 75 per cent the percentage of seeds in a given lot which will produce healthy plants under normal field conditions; and (b) a germination test by the ice chest method '(i.e., the seeds are placed between folds of moist blotting paper then placed in an ice chest at a temperature of from 4 to 6°C. for five days previous to placing them in the alternating temperature germinator)' of winter wheat and other grains immediately after threshing will indicate within 75 to 90 per cent, the percentage of seeds in a given lot which will produce healthy plants under normal field conditions."—*M. T. Munn.*

2290. Whitcomb, W. O. **Correlation of laboratory and field germination tests.** Proc. Assoc. Official Seed Analysts of North America 1923: 60–62. 1924.—In Montana, a study of the question as to how closely laboratory germination tests agree with actual field results and with 10 kinds of crop seed, including 1298 tests, leads the author to conclude that (1) there is a close relationship between laboratory and field germination tests; (2) laboratory germination tests of wheat may be expected to be about 20% higher than field tests, and with other grains studied this difference seems to decrease as the size of the seed increases, and vice versa; and (3) the germination test in conjunction with the size and nature of the seed is a good criterion as to the amount of seed to plant to secure a stand of a certain number of plants per acre under normal conditions.—*M. T. Munn.*

2291. Whitcomb, W. O. **Dormancy in newly threshed wheat.** Proc. Assoc. Official Seed Analysts of North America 1923: 28–33. 1924.—At the Montana Agric. Exp. Sta. 4 years study of the dormancy of newly threshed grain emphasizes the fact that seed analysts need information which will enable them to test newly harvested grains so as to interpret their ability to produce plants, and also, that there are several factors which may influence the germination of grains. The data obtained show that there is dormancy in newly harvested wheat when tested for viability by the ordinary laboratory methods, but that this dormancy can be overcome by the use of the low temperature method in testing. Immature wheat, and wheat which was not well cured in the field before threshing showed a higher percentage of dormancy than ripe, well cured wheat. High moisture content of the grain at time of threshing was associated with a high percentage of dormancy when the seed was tested at once. Ageing of the grain in the laboratory for 4–12 weeks decreased the dormancy to a minimum. Row tests and plot tests in the field indicate that there is no relation between dormancy as determined in the laboratory and the number of plants produced per acre when the grain is sown in the field. In Montana all viability tests of grain during the months of August to December, inclusive,

are made by using the ice chest method, that is, the seed are placed between folds of moist blotting paper in the ice chest at 4–6°C. for 5 days and then transferred to an alternating temperature of 20–30°C. for 3 days.—*M. T. Munn.*

2292. Whitcomb, W. O. **Germination of newly threshed wheat.** Proc. Assoc. Official Seed Analysts North America **1921**: 84–88. 1923.—In a continuation of studies of dormancy in cereals conducted with winter wheat, spring wheat, oats, and barley in Montana, the author concludes from experiments extending over 2 years, that (1) grains have a dormant period following threshing as is well borne out by laboratory tests at constant temperature with wheat, barley and oats; (2) in numerous field tests the contention held by farmers that planting from newly threshed wheat gives a good stand of crop is fully substantiated; (3) exposing the seed between folds of moist blotting paper to a rather low temperature in an ice chest for 6 days prior to the regular germination test gives results fairly comparable to field results; (4) curing of the grain in the field after cutting before it is threshed shows a slight beneficial effect on dormancy; (5) the extent of dormancy is less in the oats and barley allowed to ripen before cutting than in those harvested while immature; this relation was not so noticeable in the case of wheat; (6) ageing in the laboratory has the most marked effect of any treatment in decreasing dormancy; and (7) high moisture content at threshing time is associated with low initial germination in both oats and barley. There appeared to be no relationship between moisture content and germination in wheat.—*M. T. Munn.*

2293. Whitcomb, W. O. **Relative value of green and ripe seeds in alfalfa and sweet clover.** Proc. Assoc. Official Seed Analysts North America **1921**: 37–40. 1923.—In the experiments reported, the green and brown colored (immature) seed in alfalfa and the green (immature) seed in sweet clover were hand separated and compared with natural colored seed by testing them in the laboratory and the field. Results obtained in Montana from germination studies of mature and immature seed separations from the same samples show that (1) the natural colored alfalfa seed germinate 55% better in laboratory tests than the brown colored seed, and 33% better than the green colored seed; (2) the natural colored alfalfa seed produce 10 times as many plants in field tests as either the brown or green seed; (3) the percentage of hard seed in alfalfa is the same in green and natural colored seed and comparatively small in brown seed; (4) natural colored sweet clover seed germinate slightly better than the green seed in both laboratory and field; and (5) the green sweet clover seed averaged about ½ as many hard seed in 7 of the laboratory tests as did the natural colored seed.—*M. T. Munn.*

2294. White, R. G. **Rotation of crops.** Jour. Ministry Agric. Great Britain **31**: 324–330, 432–442. 1924.—A general discussion is given of the object of rotations, the chief conditions which determine rotations and the better rotations now in use in some typical sections of England.—*M. B. McKay.*

2295. Whiting, A. L. **The relation of inoculation to quality and yield of peas.** Jour. Amer. Soc. Agron. **17**: 475–487. 1925.—Inoculation of peas grown for canning increased the yield of green peas in 10 of the 12 experiments conducted. Inoculation increased the yield and the protein content of the vines; it also improved the quality and increased the protein content of the green peas. Increases due to inoculation occurred under a variety of conditions as to soil types, soil fertility, acidity and climate and with different varieties of peas.—*F. M. Schertz.*

2296. Wilson, A. C. **Relation of the seed analyst to uniform weed legislation.** Proc. Assoc. Official Seed Analysts of North America **1923**: 54–56. 1924.—There is need for up-to-date weed legislation since it is impossible to produce clean seed if weeds are neglected and allowed to produce seed. An educational campaign on weed control must be supplemented by the enactment of laws which will bring the importance of weed control to the attention of all residents and land owners.—*M. T. Munn.*

2297. Wilson, J. W., and A. H. Kuhlman. **Sunflower silage for steers.** South Dakota Agric. Exp. Sta. Bull. 199. *470–476.* 1922.—A summary is given of previous results on other types of silage and corn silage is compared with that made from the Mammoth Russian sunflower cut in late blossom with over ½ its leaves dropped. Amounts of silage eaten daily, its acidity and proximate principles and comparative gains in weight are given. As a result of their experiments the authors conclude that sunflower silage cannot be recommended where corn will reach sufficient maturity to make silage.—*E. J. Petry.*

2298. Woodbridge, Mary E., and R. E. McDonald. **Tests to determine the effect of temperature and time of exposure upon germination of cotton seed.** Proc. Assoc. Official Seed Analysts North America 1921: 97–100. 1923.—Extensive experiments to determine the safety zone to which cotton seed might be heated to kill the pink bollworm and not injure the germination of the seed showed that cotton seed possesses great resistance to heat. With dry heat on dry seed the point of injury came between 165° and 180°F., (74° to 83°C.) for short exposures; and for 2 and 3 hour periods, between 160 and 165°F. (70 and 74°C). The germinative power of the seed decreased as the temperatures and periods of exposure were increased; also the margin between the thermal death point of the pink bollworm and the temperature at which the viability of cotton seed became injured is large enough to be safe and to make sterilization of the seed by heating practical.—*M. T. Munn.*

SOIL SCIENCE (EDAPHOLOGY)

2299. Albert. **Die ausschlaggebende Bedeutung des Wasserhaushaltes für die Ertragsleistungen unserer diluvialen Sande, ermittelt durch Bodenuntersuchungen in dem Waldgebiet der Standesherrschaft Lieberrose, N. L.** [**The outstanding importance of moisture upon the yield possibilities of diluvial sands, as determined by soil studies in the forest territory of Lieberrose, N. L.**] Zeitschr. Forst- u. Jagdw. 56: 193–202. 1924.—Chemical and physical analysis of the 4 distinct soils found on the Lieberrose forest in the lower Lausitz indicated that with a decrease in coarse sand (2.0–0.2 mm.) and increase of fine sand (0.2–0.02 mm.) the quality was improved and the soil flora changed. The difference in relative fertility lies in the water-retaining capacity of the soils, the poorer soils being too porous to retain moisture. In mineral content, these soils, even the poorest, compare favorably with those of Bärenthoren and Eberswalde. Physiologically they are very shallow, however, due perhaps to excessive removal of forest litter in the past, and the problem of building them up involves to some extent the artificial addition of humus. Pure pine cultures are not recommended on the poorer soils, but pine mixed with hardwoods to build up and protect the soil, which is rich enough in minerals to produce mixed stands, should succeed. Regeneration of pine on sites where the soil has been covered with litter is easily secured, and it has been shown that seeding is successful under this condition, even on the dry sites.—*J. Roeser.*

2300. Bartels, P. M. **Ondersoekingen over de mogelijkheid van vervangingen van de gebruijke dessa-aarde of stalmest door boenkils of kunstmeststoffen.** [**Investigations on the possibility of replacing dessa-earth or stable manure with seed cake or commercial fertilizers.**] (English summary.) Mededeel. Proefsta. Vorstenland. Tabak. 51: 3–141. 1924.—The spread of *Phytophthora nicotiana* through dessa-earth (village humus) and stable manure has raised the question whether a suitable substitute can be found for these 2 manures. The investigations reported include soybean cake, copra, kapok cake, mixtures of peanut and kapok cake and Jatropa cake. They all can be used as substitutes.—*Cecil Yampolsky.*

2301. Blanck, E., und F. Alten. **Zweiter Beitrag zur Frage nach der Vorbehandlung der Böden mit Ammoniak für die Atterbergsche Schlämmanalyse.** [**The preliminary treatment of soil with ammonia for the Atterberg analysis by elutriation.**] Jour. Landw. 73: 39–43. 1925.—The authors had previously found that treatment of soil with $2\frac{1}{2}\%$ NH_2 preliminary to the Atterberg mechanical analysis, dissolved appreciable quantities of SiO_2 and CaO, which hereupon introduced an error. This solvent action is confined to soils in the acid regions which have a high salt content. The present paper deals with 15 very different German soils. From these soils the NH_3 treatment dissolved only slightly more than pure water.—*F. M. Schertz.*

2302. Bobko, E. W., and D. L. Askinasy. **Contribution to the question concerning the methods of estimating the adsorption capacity and the condition of unsaturation in soils.** Труды Научного Института по Удобрениям Выпуск [Trans. Inst. Fertilizers] 25: 1–42. Moscow, 1925.—According to Gedroiz, the adsorption capacity is to be understood as the concentration of bases present in the soil in the adsorbed condition, or the concentration of those bases which can be brought into solution by the action of neutral salts. This concentration is a constant, characteristic for each soil.—The adsorption capacity of a soil can be determined in the following manner: The adsorbed bases are extracted from the soil by treat-

ment with a solution of a neutral salt, and the bases brought into solution are determined by slow and rather tiresome procedure.—Since the replacement of the adsorbed bases by those of the neutral salt solution takes place in equivalent proportions, the authors estimated the adsorption capacity from the amount of bases adsorbed by the soil in the process of replacement.—Barium chloride was found to be a satisfactory salt with which to replace the bases. The determination is carried out in the following manner: A weighed quantity of soil (5–10 g.m.) under examination is treated upon a funnel with a solution of $BaCl_2$ as long as the absorbed bases (represented in the majority of cases by Ca) are found in the filtrate. The excess of the barium chloride is then removed by water, and the adsorbed barium is extracted from the soil upon the same funnel by dilute HCl, and is then determined as barium sulphate.—The values for the adsorption capacity estimated by this method are very close to the values for adsorption capacity estimated by determining the sum of bases.—The authors' experiments have shown that if the same sample of soil is treated with $BaCl_2$ and N/20 HCl alternately, 5 or 6 times, the adsorption capacity of the soil, determined from the quantity of barium extracted by HCl remains fairly uniform in the case of soils with a low adsorption capacity (podsol), while it is decreasing rapidly at first and then more slowly in the case of a tchernosem with a high adsorption capacity (0.8–1% bases calculated as Ca). The presence of alkali earth carbonates, as in the case of many tchernosem soils, may lead to inaccurate estimations of their adsorbing capacities. A theoretical discussion of the action of $BaCl_2$ on such soils is given.—The authors have applied the term "unsaturated soils" to soils which contain among the adsorbed bases the H-ion, as was done by Gedroitz and Hissink.—By treatment of soil with $BaCl_2$ the H-ion can be replaced as well as other bases, but not as readily. The amount of free acid is estimated in the solution of $BaCl_2$ by titration with phenolphthalein. The estimation of the degree of unsaturation has shown that in some cases (podsol soils) the unsaturation constitutes 48.5% of the total adsorption capacity. Owing to the small positive values of unsaturation, the authors were unable to determine how great a part is to be ascribed in bringing about this condition to the sesquioxides, the importance of which has been emphasized by Daikuhara and Kappen.—In the experiments mentioned above, consisting in saturating the soil with Ba by treatment with a solution of $BaCl_2$, and with H-ion, by treatment with a solution of HCl, the authors succeeded in showing that there exists a fairly equivalent proportion between the quantities of the Ba and H ions adsorbed by the soil in the process of removal of Ba by the solution of N/20 HCl. These experiments confirm the assertion of Gedroitz and of Hissink that the condition of unsaturation is to be regarded as the substitution of the H-ion in place of the bases of the adsorbing complex.—*S. A. Waksman.*

2303. Dachnowski, Alfred P. **Differences in peatlands for crop production.** Amer. Cranberry Growers Assoc. Proc. Ann. Meeting 55: 8–10. 1925.—This is a discussion of the information on peat gained by the Bureau of Plant Industry, U. S. Dept. Agric. Commercial success in agricultural development of peatland in the past has been a matter of chance because sites have been chosen on the basis of native surface vegetation. Profiles of peat deposits taken at widely separated places show that the surface vegetation such as cedar swamp, mixed tree swamp, or leather-leaf bog is not indicative of the essential differences in the subsurface layers with respect to drainage, shrinkage, water holding capacity, aeration, and possible frost injury and, therefore, it is not indicative of its agricultural possibilities. Available information of the U. S. Department of Agriculture shows that there are 3 groups of organic matter in peat, the sedimentary, the fibrous, and the woody, each of which has physical characteristics indicating its agricultural value. Chemical differences are not so well understood but some data have been collected relative to the value of special forms of analysis in determining the value of peatland. A profile of all peat beds under consideration for agricultural development should be studied and their probable reaction to the physical change during development should be taken into consideration and plans made accordingly. References are made to other articles containing pictures showing the characteristic appearance of the various kinds of peat deposit.—*C. S. Beckwith.*

2304. Davis, R. O. E. **Colloidal determination in mechanical analysis.** Jour. Amer. Soc. Agron. 17: 275–279. 1925.—The presence of colloids in soils in greater proportion than was formerly believed has made it desirable to express the colloidal content in the mechanical

analysis. The difficulty of dispersing the colloid completely even by repeated extractions with water renders direct separation impracticable. The absorption of water vapor by soils is dependent on the colloidal material present and the amount of absorption is proportional to the colloid present. The average absorption of 34 soil colloids over 3.3% sulphuric acid is 0.3 gm. of water per gram of colloid. By dividing the absorption per gram of soil by 0.3 the percentage of colloid present may be determined. The method proposed is to carry out the separation of the sand sizes in a soil by the usual method, to determine the colloid content by the water absorption method, and to obtain the silt by difference.—*F. M. Schertz.*

2305. Easterby, H. T. **Annual field day at Margam. Demonstration of the year's work.** Australian Sugar Jour. 17: 213–214. 1925.—Application of lime to the red volcanic soils of the Sugar Experiment Station in the Woongarra District of Bundaberg, in which the percentage of available potash was very low, gave negative results, while in experiments in which potash was the sole fertilizer, remarkable results were obtained. "The average yield from plant, first ratoon and second ratoon crops to which 300 lbs. [pounds] of sulphate and muriate of potash were applied amounted to 22.43 tons of cane per acre. From the plots to which no potash was applied the average yield per acre was only 8.37 tons of cane. . . . . The cost of the potash manure at the rate of 300 lbs. per acre was only £3 per acre, while the revenue for 14 extra tons of cane was about £31/10–. In another series of experiments the average yield for plant, first ratoon and second ratoon crops from the application of 300 lbs. of sulphate of potash per acre was 20.29 tons of cane per acre, while the plots receiving no potash gave only an average yield per acre of 10.28 tons." In this series of experiments, plots treated with 300 lbs. of sulphate of potash per acre gave an increased yield of 3.14 tons of cane per acre more than were produced on plots on which 600 lbs. of mixed fertilizer, containing 100 lbs. of muriate of potash, was applied per acre. While it is not claimed that dressings of potash alone will give higher results than mixed fertilizers upon the red soils it is believed that they will do so at first where the potash content is low, but on the northern alluvial soils, where the available potash is higher, potash alone would not give such an increase in yield. Sulphate of potash applied at the rate of 300 lbs. per acre is very effective in preventing the yellowing of cane leaves and the accompanying stunting of the sticks.—In variety trials of canes from Mauritius, Fiji, Barbadoes, and Demarara, the Fiji cane 7R.428 gave the highest tonnage for plant and ratoon cane, the average being 19.17 tons of cane and 3.04 tons of sugar per acre; the next best was M.28–10, which, for plant and ratoons, averaged 17.30 tons of cane and 2.04 tons of sugar per acre.—*Nellie E. Fealy.*

2306. Lochhead, A. G. **Microbiological studies in frozen soil.** Canada, Dept. Agric. Exp. Farms. Rept. Dominion Agric. Bact. 1924: 12–17. 1925.—Under conditions of frost, microbiological activities are suspended with little change in the form of the plant food constituents. This quiescent period should be regarded as beneficial, for, although complex organic plant residues are but little altered, there is no overproduction of nitrates to be washed out with the spring thawing. As there is no depletion in numbers of bacteria during the winter there is no shortage in the spring.—*T. G. Major.*

2307. Nolte, O. **Beiträge zur physiologischen Reaktion von Düngesalzen. [Contribution to the physiological reaction of fertilizer salts.]** Mitteil. Deutsch. Landw. Ges. 40: 728–731. 1925.—The author questions the theory that physiologically acid fertilizers increase the acidity of the soil and that this is the cause of decreasing returns. From a study of certain experiments in which ammonium nitrate and potassium sulphate were used, the author concludes that the crop yields are limited by the unbalanced character of the fertilizer. A graph shows the results from the application of these fertilizers in various combinations.—*A. J. Pieters.*

2308. Salisbury, E. J. **The influence of earthworms on soil reaction and the stratification of undisturbed soils.** Jour. Linn. Soc. Bot. London 46: 415–425. 1923.—Wormcasts are generally less acid or less alkaline than the original soil. The content of carbonates is higher in the wormcasts than in the surface soil. The frequency of earthworms in natural soils is determined in part by the soil reaction, the frequency diminishing with departures from the neutral point. It is suggested that earthworms may influence the type of vegetation.—*Lewis Knudson.*

2309. Schneider. **Erfahrungen in der Ödlandaufforstung. [Afforestation experiences**

on barren lands.] Zeitschr. Forst- u. Jagdw. 56: 169–178. 1924.—Extensive studies of pine cultures on heath soils indicated that growth stagnation is due to inability of the roots to penetrate the highly acid raw humus stratum under the sandy surface soil, to their subsequent spreading out over the layer and to failure to supply the necessary plant food for continued growth. The evil influence of this heath stratum on the soil lies in the fact that, like hardpan, it prevents soil aeration. Planting on this soil demands very intensive soil preparation, whose chief aim is to get thorough disintegration and mixing of mineral soil with raw humus. Pine will continue to be the principal species for planting, at least in northern Westphalia, with birch as a nurse tree, because it is not fastidious and besides other favorable qualities has the ability to penetrate the raw humus strata.—*J. Roeser.*

2310. Stiny, Josef. **Böden unserer nördlichen Kalkalpen. [Soils of our northern limestone Alps.]** Centralbl. Gesam. Forstw. **47**: 317–335. 1921.—The soils of the limestone Alps of Austria are briefly described, with special reference to their geological origin and their utilization for forests or agriculture.—*W. N. Sparhawk.*

2311. Waksman, Selman A. **The soil population.** Proc. Nation. Acad. Sci. [U. S. A.] **11**: 476–481. 1925.—Microorganisms causing disease and those involved in various industrial processes commonly act in pure culture or practically so, or produce comparatively simple transformations. The soil microorganisms are of many kinds, act in an extremely complex medium, are often concerned in complex transformations, and usually act in association results from pure cultures therefore often lead to wrong conclusions respecting soil processes. These propositions are illustrated by considerations relating to various soil processes due to microorganisms; for example, addition of cellulose to soil usually favors fungi mainly; and addition of protein, bacteria; but these results could not be predicted from ordinary pure-culture data. Organisms often succeed each other in the soil, as when bacteria utilize fungus protoplasm; organisms often work in association in the soil, one utilizing products of another, as when one kind of bacteria breaks down proteins and another utilizes the resulting amino acids. The knowledge of the activities of the various kinds of soil organisms must be correlated. Soil processes must be studied in the soil itself.—*Howard B. Frost.*

2312. Waksman, Selman A. **What is humus?** Proc. Nation. Acad. Sci. [U. S. A.] **11**: 463–468. 1925.—The composition and mode of formation of soil "humus" is little known, largely because there has been little attempt to study the actual process of its formation. Fischer's hypothesis that humus is formed from lignins and fats, because of their high resistance to decomposition, seems inadequate for several reasons, including the presence of N, the approximately constant ratio of N to C, and the possibility of separation into several fractions by differences in solubility. The author is studying the process of humus formation; some preliminary results, including several representative analyses, are here presented, and general considerations discussed. Of the 3 portions of the soil organic matter separable on the basis of their solubility in alkali and in water, the portion (60 to 70% of the organic matter in normal soils) dissolved by alkali and precipitated by acid is the most important; this consists of 2 fractions as follows: Fraction α is soluble in dilute alkali but not in dilute acid; has ash, about 0.5–3.0% and N, about 2.5–3.5%; is the so-called "humic acid" giving the black color to soil; is derived largely from lignins and from cells of soil microorganisms; accumulates owing to decomposition of fresh organic materials; is itself decomposed very slowly and by few soil organisms; is the dominant (often only) fraction in the soil very high in organic matter, as peat acids.—Fraction β is soluble in both dilute acid and dilute alkali, is precipitated at an isoelectric point near pH 4.8; has ash, 30–50% and N about 1%; produces buffer properties and so-called "organic-soil-colloid" phenomena; is of unknown origin. Its amount in a given soil is highly variable with changing conditions, but in mineral soils often exceeds that of the β fraction.—*Howard B. Frost.*

BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

CARROLL W. DODGE, *Editor*

(See also in this issue Entries 2261, 2462, 2502, 2525, 2559, 2565, 2590, 2724)

2313. ANONYMOUS. **Botanic Garden wreath for bust of Asa Gray.** Brooklyn Bot. Gard. Rec. **14:** 123–124. 1925.—A bust to Asa Gray was unveiled in the Hall of Fame, New York University, on May 21, 1925. The bust was donated by The Gray Herbarium, Harvard University. Wreaths were laid at the base of the bust by the Brooklyn Botanic Garden and the New York Botanical Garden.—*C. S. Gager.*

2314. ANONYMOUS. **Geheimer Hofrat Professor Dr. Max Friedrich Kunze.** Centralbl. Gesam. Forstw. **48:** 50–53. 1922.—Kunze (Feb. 10, 1838–March 9, 1921) taught forest measurements, valuation, and mapping at the Forest Academy, Tharandt, for over 50 years, besides carrying on research at the Forest Research Institute. He was the author of many articles and several books, mostly dealing with forest measurements, yield, thinnings, and relation of yields to method of planting.—*W. N. Sparhawk.*

2315. ANONYMOUS. [**Natal Sugar Experiment Station.**] Internat. Sugar Jour. **27:** 459–460. 1925.—The question of financing a sugar experiment station by means of a loan from the Union Government has reached a successful issue. A large part of the laboratory equipment has reached Durban and preparatory arrangements have been made for erecting the buildings. The station will be located on land leased by the Natal Estates, Ltd. for 99 years, will include 60 acres, and when completed will be the center of scientific research for the Natal sugar industry.—*Nellie E. Fealy.*

2316. ANONYMOUS. **Obituary. O. Brefeld.** Nature **116:** 369. 1925.—Oscar Brefeld was born at Telgte in Westphalia, August 19, 1839. His doctors degree was taken at Berlin and he held positions at Berlin, Eberswalde, Münster and Breslau. He originated the gelatine and agar-agar culture methods and his greatest publication was "Botanische Untersuchungen aus dem Gesammtgebiete der Mykologie" of which 18 volumes were published, beginning in 1872.—*O. A. Stevens.*

2317. ANONYMOUS. **Sir Francis Darwin.** Nature **116:** 583–584. 1925.—This author's work in plant physiology is reviewed. His earliest work was in medicine. He was university lecturer in botany at Cambridge from 1884 to 1888, and reader from 1888 to 1904. He had much to do with the reorganization of the Botany School especially from 1892 to 1895. He probably will be best known by his "Life and Letters of Charles Darwin."—*O. A. Stevens.*

2318. ANONYMOUS. **Sir William Thiselton-Dyer and the "Flora-Capensis."** Nature **116:** 474–475. 1925.—This is a review of the work of this author. The Kew Bulletin of Miscellaneous Information, begun in 1887, also extensive growth and re-ordering of the material at the Kew Museum, are mentioned as among his notable accomplishments.—*O. A. Stevens.*

2319. ANONYMOUS. **The Australian Sugar Producers' Association. Its policy and work for the industry.** Australian Sugar Jour. **6:** 333–334. 1925.—The Australian Sugar Producers' Association is the outcome of a meeting of representative sugar growers at Townsville in 1904, to discuss problems that had arisen as the result of Federal legislation, and of a 2nd more widely representative meeting at the same place in February, 1907, at which a subcommittee was appointed to report on the subject of an organization for the whole sugar industry. The report of this committee, which included a constitution the essential particulars of which are in the constitution as it now exists, was adopted later and the Association organized. The constitution is printed in full and the work of the organization under the different provisions outlined.—*Nellie E. Fealy.*

2320. ANONYMOUS. **The passing of Romeyn B. Hough.** Amer. Forests and Forest Life **30:** 671. *1 portrait.* 1924.

2321. BAILEY, L. H., AND ETHEL ZOE BAILEY. **Rus: A biographical register of rural leadership in the United States and Canada.** *758 p.* Published by the Authors: Ithaca, New York, 1925.—"This issue of Rus contains 6,005 biographical entries as against 4,631 in the second (1920) issue . . . . Rus is intended to be a register of rural leadership, in the persons of living men and women. It aims to include those persons who are prominently engaged in rural work, and in whom the public has reason to be interested, as farmers, teach-

ers, investigators, business men, lecturers, ministers, farm, county and home demonstration agents, authors, editors, and leading personalities in the administrative, commercial, co-operative, organizational, political and public-service fields as they directly influence agriculture and country life . . . . it is not intended to include persons because they are good farmers but only as they are charged with the public interest . . . . Rus may now be considered an established enterprise, the volume to be made new and issued every five years."—A directory of journals (U. S. A. and Canada) devoted to agriculture and rural life covers the last 14 pages.—*Frederick V. Rand.*

2322. Beckmann, Ewald. **Die Deutsche Akademie.** Minerva-Zeitschr. **1**: 164–166. 1925.—This article is a discussion of the "Akademie zur Wissenschaftlichen Erforschung und zur Pflege des Deutschtums," which was founded May 5, 1925, at Munich.—*Frederick V. Rand.*

2323. Bertenshaw, W. H. **The story of a great American tree.** Amer. Forests and Forest Life **31**: 338. *1 fig.* 1925.—A short account of the historic Washington Elm, which, until Oct. 27, 1923, was growing in Cambridge, Massachusetts.—*Chas. H. Otis.*

2324. Cieslar, Adolf. **Hermann (von) Guttenberg.** Centralbl. Gesam. Forstw. **48**: 309–312. 1922.—Guttenberg (born Nov. 18, 1833; died November, 1922) played a leading part in the reforestation of the Karst region of Trieste, Istria, and Dalmatia. He wrote several articles and bulletins dealing with forestry in that region and with the trees of southern Austria.—*W. N. Sparhawk.*

2325. Cook, O. F. **Peru as a center of domestication.** Jour. Heredity **16**: 34–46, 95–110. *20 illus.* 1925.—Domestication should be studied as a biological problem, laying aside the traditional assumption of a primitive pastoral state. Plants probably were domesticated before animals, and this is definitely indicated in America. The primitive civilizations of America were an indigenous development, since they were based on native American plants. A general unity of the native agriculture of America may be recognized, in view of the wide dissemination of the maize plant (*Zea*), usually accompanied by beans (*Phaseolus*), squashes (*Cucurbita*), and several attendant species. The Peruvian region was the chief center of domestication in America, as shown by the large number of plants that were cultivated, estimated at 70 species, and several species of animals. A list of 90 native names of domesticated plants is included. A study of the native names of cultivated plants in Peru indicates that all of the lowland crop plants of other regions were known to the ancient Peruvians before the Spanish conquest. Wild prototypes of these plants have not been discovered in other parts of America and may be sought in the Peruvian region.—*Robert Cook.*

2326. Erdmann, Rhoda. **Verzeichnis der in den Jahren 1920–1924 erschienenen Arbeiten aus dem Gebiete der Explanation. [List of works in the realm of the "Explanation" appearing during the period 1920–1924.]** Archiv. Exp. Zellforsch., besonders Gewebezuchtung (Explanation) **1**[1]: 130–144. 1925.

2327. Gertz, Otto. **Otto Nordstedt.** Rev. Algologique **2**: 72–80. *Portrait.* 1925.—Carl Fredrik Otto Nordstedt was born Jan. 20, 1838, and died at Lund, Sweden, on Feb. 6, 1924. His publications deal especially with the Characeae and the Desmidiaceae. A bibliography is appended.—*Wm. Randolph Taylor.*

2328. Heske, Franz. **Hofrat Prof. Theodor Micklitz.** Centralbl. Gesam. Forstw. **48**: 53–59. 1922.—Micklitz (Nov. 8, 1856–Jan. 11, 1922), after many years in the Austrian Forest Service and as Director of the Imperial forests, in 1912 became professor of forest regulation at the Hochschule für Bodenkultur, at Vienna. He filled this position until his death, except for service in organizing the production of war materials from the Polish forests during the war. He wrote many articles on various phases of forestry, particularly on silviculture and regulation.—*W. N. Sparhawk.*

2329. James, T. E. **The British Association: Connection with Oxford.** Nature **116**: 402–408. 1925.—The meetings at Oxford from 1832 to 1894 are reviewed.—*O. A. Stevens.*

2330. Janka, [Gabriel]. **Hofrat Ing. Dr. Adolf Stengel.** Centralbl. Gesam. Forstw. **48**: 246–250. 1922.—Stengel (1865–1922) filled various positions in the Austrian Forest Service, and from 1912 to 1916 was chief of the Austrian forestry mission which was engaged in reorganizing the Greek Forest Service. He published articles on Greek forests and on growth

and volume studies of *Abies cephalonica*, as well as on other phases of forest work.—*W. N. Sparhawk.*

2331. Troup, R. S. **Obituary. Sir William Schlich.** Nature 116: 617–618. 1925.—Schlich, who died September 27 at the age of 87, was an outstanding figure in forestry. A native of Hesse-Darmstadt, he received his Ph.D. at Giessen in 1866 and entered the Indian Forest Service the same year. In 1905 he was transferred to Oxford. He was a great teacher and at the present time there is not a single senior officer in the Indian Forest Service who was not trained by him. His best known publication is his "Manual of Forestry."—*O. A. Stevens.*

BOTANICAL EDUCATION

C. Stuart Gager, *Editor*

Arthur H. Graves, *Assistant Editor*

(See also in this issue Entries 2406, 2436, 2485, 2500, 2558, 2623, 2671)

2332. Anonymous. **An arboretum for Adelaide.** South Australian Naturalist 6: 65–66. 1925.—A list of the trees planted is given.—*Wm. Randolph Taylor.*

2333. Anonymous. **Science at Oxford.** [Rev. of: Gunther, R. T. **Early science at Oxford. 3, pt. 1. The biological sciences; pt. 2. The biological collections.** *xii + 564 p. 64 pl.* The author, Magdalen College: Oxford, 1925.] Nature **116:** 346–347. 1925.

2334. Anonymous. **The Mauritius College of Agriculture.** Internat. Sugar Jour. **27:** 460. 1925.—The date of commencement of the College of Agriculture has been changed from September to January, thus synchronizing with the commencement of the scholastic year of the Royal College and other secondary schools. At the end of 1924 the college buildings were practically ready for occupancy.—*Nellie E. Fealy.*

2335 Anonymous. **The Science Museum, South Kensington.** Nature **116:** 580–583. *4 fig.* 1925.—This is a description of the progress and arrangement, relating chiefly to engineering.—*O. A. Stevens.*

2336. B. F. A., **Bergens Museum.** Nature 116: 592. 1925.—This is a brief review of the history and work of the museum.—*O. A. Stevens.*

2337. Bower, F. O. **Plants and man: a series of essays relating to the botany of ordinary life.** *ix + 365 p. 148 fig.* Macmillan & Co.: New York and London, 1925.—In the opening chapters this book deals with the plant kingdom from a morphological and an ecological standpoint, but the main part of the book emphasizes man's intimate relation to the plant kingdom. This is summed up in the final chapters: "Man's dependence on vegetation," and "Man's influence on vegetation."—*A. H. Graves.*

2338. Calder, C. C. **Annual report of the Royal Botanic Garden and the Gardens in Calcutta and of the Lloyd Botanic Garden, Darjeeling, for the year 1924–25.** *5 p.* Bengal Secretariat Book Depot: Calcutta, 1925.

2339. Cattell, J. McKeen. **Science and intellectual freedom.** Nature **116:** 358. 1925.—Comment is made upon the series of articles in Nature **116:** 69–83.—*O. A. Stevens.*

2340. Direct. Agric., Commerce & Indust. Algeria. **Le jardin d'essai du Hamma a Alger. [The experimental garden of Hamma in Algeria.]** *6 p. Illus.* Algerian Press: Algeria, 1922.

2341. Gatin, C. L. **Dictionnaire aide-mémoire de botanique.** Rev. et corr. après la morte de l'auteur par Mme. Allorge-Gatin. **[Handy dictionary of botany.** Rev. and corr. after the death of the author by Mme. Allorge-Gatin.] *847 p.* Lechevalier: Paris, 1924.

2342. Hoehne, F. C. **Album da secção de botanica do Museu Paulista e suas dependencias, etc. [Album of the botanical section of the Paulist Museum and its affiliated institutions.]** *201 p. + index. 223 fig. (5 col.).* Sao Paulo, Brazil, 1925.—This is a profusely illustrated account of the botanical collections at the Paulist Museum and of a biological station, a floristic reservation and a botanic garden maintained in connection with it.—*A. H. Graves.*

2343. Hovey, Mary. **A few springtime flowers.** Amer. Midland Nat. **9:** 379–380. 1925.

2344. Mirtschuk, J. **Das ukrainische Hochschulwesen in der tscheckhoslovakischen**

Republik. [The Ukrainian University system in the Czechoslovakian Republic.] Minerva-Zeitschr. 1: 160–163. 1925.

2345. Rolfe, R. T., and F. W. Rolfe. **The romance of the fungus world; an account of fungus life in its numerous guises, both real and legendary.** *xx + 309 p. 85 fig.* Chapman and Hall: London, 1925.—This treats in a popular way of the group of the fungi, discussing references to them in folklore and fiction, describing their morphology, the damage they cause, also their uses in medicine, in the arts and as food. Poisonous fungi, the study of fungi as a hobby, and the derivation of fungus names, are among other subjects treated.—*A. H. Graves.*

2346. Sch. [Rev. of: Köllner, F. **Forstwirtschaft. Zum Gebrauche an Landwirtschaftsschulen, landwirtschaftlichen Winterschulen und Forstlehrlingsschulen.** (Forestry —for the use of agricultural schools, etc.) *84 p. 26 fig.* Paul Parey: Berlin, 1921.] Centralbl. Gesam. Forstw. 47: 371. 1921.—Although there are a few errors, the book fulfills satisfactorily the purpose for which it was written.—*W. N. Sparhawk.*

2347. Schmoe, F. W. **Our greatest mountain: a handbook for Mount Rainier National Park.** *Illus. Map. xii + 366 p.* G. P. Putnam's Sons: New York and London, 1925.—This book is divided into 3 parts which treat respectively of Mount Rainier itself, in particular its geology and connection with human history; the Mount Rainier National Park, its scenic features and administration; and finally, descriptions of the flora and fauna, including a brief account of the life zones of Mount Rainier.—*A. H. Graves.*

2348. Tempany. **Mauritius College of Agriculture.** Australian Sugar Jour. 6: 380. 1925.—The Mauritius College of Agriculture, inaugurated early in the year, has as part of its teaching facilities the experimental fields, stock farm, dairy, etc., and, through arrangements with estates, some will be visited by students under the guidance of lecturers and some will take students as volunteer workers during vacations. The courses of instruction, which are briefly discussed, are based on curricula the aim of which is not to turn out ready-made planters, but to teach the fundamental facts, principles, and elements of handicraft which underlie successful planting. The author believes that the College has "evolved a concrete and definite scheme in relation to specialized agricultural teaching as a sequel to secondary education." *Nellie E. Fealy.*

2349. Westermann, T. **En önskelig Udvidelse af den höjere Land brugsundervisning i Danmark.** [A national desire for a higher agricultural education in Denmark.] Tidsskr. Lando. 6: 257–275. 1925.—This is a plea for raising the already high standard of agricultural education in Denmark. One table of statistics is included.—*Albert A. Hansen.*

CYTOLOGY

Gilbert M. Smith, *Editor*

(See also in this issue Entries 2544, 2572, 2626, 2634, 2635, 2642, 2654, 2749, 2835, 2888)

2350. Guthrie, Mary J. **Cytoplasmic inclusions in cross-activated eggs of Teleosts.** Zeitschr. Wiss. Biol., Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 347–381. *Col. pl. 14–16.* 1925.—A full account of technical methods is followed by descriptions of the cytoplasmic inclusions to be found in species-activated and cross-activated eggs. The author's conclusions are as follows: (1) The cytoplasmic inclusions of the eggs of teleosts can be most logically interpreted as representing stages in the metabolic activities of the cytoplasm and end products of such activities. (2) The mitochondria are the result of the typical cytoplasmic equilibrium with respect to content of phospholipin which is combined with protein. (3) The activation of the egg by a foreign sperm introduces foreign enzymes which cause a hastening of the transformation of certain of the cytoplasmic inclusions. (4) It may be possible to explain the development of hybrids on the assumption that the cytoplasm of the egg does not contain materials which are necessary for the maintenance of the supply of foreign chromatin, or that the use of cytoplasmic reserves for the synthesis of foreign chromatin robs the egg of sources of energy necessary to complete development.—*Ralph E. Cleland.*

2351. Heitz, E. **Das Verhalten von Kern und Chloroplasten bei der Regeneration.** [The behavior of nucleus and chloroplasts in the process of regeneration.] Zeitschr. Wiss.

Biol. Abt. B., Zeitschr. Zellforschung u. Mikrosc. Anat. 2: 69–86. *Pl. 2, 10 fig.* 1925.—In regenerating cells of leaves of liverworts and mosses, the nucleus enlarges preparatory to division, and the chloroplasts crowd around the nucleus, dividing before it does. Approximately ½ of the chloroplasts are carried to each pole. After the first division in liverworts, nucleus and plasma become reduced to the size typical of embryonic cells. The "kern-plasma" relation in these cells, as well as the behavior of the plastids, indicates that they are typically embryonic in nature, and that fully differentiated cells are capable, in these plants, of returning to an embryonic state.—*Ralph E. Cleland.*

2352. Koch, Anton. **Morphologie des Eiwachstums der Chilopoden.** [**Morphology of the growth period in the eggs of Chilopods.**] Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 293–346. *3 pl., 16 fig.* 1925.—The following myriopods were investigated—*Geophilus longicornis, Scolioplanes crassipes, Geophilus* spec. I, *Geophilus* spec. II, and *Lithobius forficatus.* In *Scolioplanes crassipes* and *Geophilus* spec. I, the germinal vesicle loses its spherical shape during a portion of the growth period and develops a number of pseudopodium-like branches or projections. In the other species these structures are absent. A more or less highly differentiated perinuclear zone is present. This is particularly well developed in *S. crassipes* and *Geophilus* spec. II. In *Lithobius* a large number of small nucleoli are formed, but in the other species there is but one large nucleolus, from which smaller ones may be budded off in late stages. In *S. crassipes,* small nucleoli thus formed take up positions in the tips of nuclear projections. The nucleolus seems to bear a relation to the formation of a nuclear cap or cone, and through this, to the development of the yolk-nucleus. This is particularly clear in *G. longicornis,* where a prominent cone is developed in close proximity to the peripherally placed nucleolus, and the passage of safraninophilous bodies from the nucleolus to the cone can be observed. In *S. crassipes,* also, there is usually a nuclear cap surrounding the end of each nuclear projection, in close association with a small nucleolus. The situation is not so clear in the other species, but indications are that the same relation holds true. The nucleolus would therefore appear to play a very important rôle in the chemical changes carried on in the egg. The yolk-nucleus appears early in *G. longicornis,* and is apparently formed close to the nucleus from yolk-spherules, some of which at least originate in the nuclear cone. In *Geophilus* spec. II, the yolk-nucleus does not appear until a later period, and in the undifferentiated cytoplasm. In both species, it is surrounded by well developed radial striations, but there is no indication that it is a centrosome by nature. The yolk-nucleus is less well developed in the other species. It apparently plays an important part in the transformation of materials in the cell. This is indicated by the manufacture of oil and glycogen in the yolk-nucleus, and by its degeneration at the end of yolk formation and its final metamorphosis into yolk-spherules around the egg periphery.—The paper closes with an extensive discussion of literature.—*Ralph E. Cleland.*

2353. Merton, Hugo. **Experimentelle Untersuchungen über das Kinoplasma der Flimmerzelle.** [**Experimental studies on the kinoplasm of ciliated cells.**] Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 382–407. *7 fig.* 1925.—From a study of the effect of different salt solutions upon the living ciliated epithelium of certain mussels and of frogs, the conclusion is reached that the major portion of the interior of these cells is occupied by a homogeneous plasma which extends out and becomes the plasmatic sheath of the cilia, and which is capable of active movement. This is called "kinoplasm" and appears to be responsible for the activity displayed by the cilia.—*Ralph E. Cleland.*

2354. Nassonov, Dimitry. **Zur Frage über den Bau und die Bedeutung des Lipoiden Excretionsapparates bei Protozoa. (Chilon spec. [Infusoria holoticha], Dogielella sphaerii G. Poljansky [Infusoria astomata]).** [**The structure and significance of the lipoid excretion apparatus in protozoa. (Chilon sp. [Infusoria holotricha], Dogielella sphaerii G. Polajansky [Infusoria astomata]).** Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 87–97. *5 fig.* 1925.—The ring- or horseshoe-shaped lipoid excretion apparatus in the above named species are shown to be not only very similar in structure to the Golgi apparatus in many metazoon cells, but to resemble in their functioning the Golgi apparatus in the gland cells among certain of the metazoa.—*Ralph E. Cleland.*

2355. Nawaschin, M. **Morphologische Kernstudien der Crepis-Arten in Bezug auf die**

Artbildung. [Studies of nuclear morphology in Crepis species, in relation to species formation.] Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 98–111. *10 fig.* 1925.—The 10 species under discussion possess the haploid chromosome numbers 3, 4, or 5. Two types of chromosome are found in all of these species—V- to J-shaped ones with a constriction at the apex or bend, and chromosomes containing a satellite at one end. A definite homology can be traced between the chromosomes of the different species when they are compared structurally. *C. virens*, the only 3-chromosome species examined, has lost one of its J-shaped chromosomes. Those with 5 chromosomes have acquired an extra chromosome, which, however, is not homologous with any of the other 4, or with parts of any of these, and has therefore not been derived through the segmentation or doubling of one of the other chromosomes. *C. virens*, in spite of its loss of an entire chromosome, does not show any marked deficiency or weakness, but on the contrary, displays, in one case at least, the positive gain of a character. The 5-chromosome forms do not possess the additional characters to be expected in view of the acquisition of an extra chromosome. These facts are considered to be in sharp contrast to modern chromosome theories.—*Ralph E. Cleland.*

2356. Stern, Curt. **Die Mitose der Epidermiskerne von Stenostomum.** [Mitosis in the epidermal nuclei of Stenostomum.] Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 121–128. *3 fig.* 1925.—A type of mitosis is described in the epidermal cells of this Turbellarian in which the spindle is intranuclear, and both chromosomes and centrosomes are organized from the central karyosome or "Binnenkörper." The chromosomes pass through no spireme stage, and their shape precludes the possibility of a decision as to whether they are longitudinally or transversely divided in mitosis. The protozoon-like character of such a nucleus is emphasized.—*Ralph E. Cleland.*

2357. Studnička, F. K. **Die Cuticula und die Grenzschichten der Tierischen Zellen.** [The cuticle and the limiting membranes in animal cells.] Zeitschr. Wiss. Biol. Abt. B., Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 408–479. *1 fig.* 1925.—After a lengthy discussion of earlier classifications of the limiting membranes in animal cells, the author presents a classification of his own, based on the following features: (1) The thickness of the membrane, (2) the nature of the boundary between the surface layer and the inner protoplasm, (3) the consistency of the membrane, and (4) the substance out of which it is made. The characteristics of each type of membrane are given, and examples cited. The author's classification is presented in tabular form at the end of the paper, together with a set of diagrams illustrating each type. The paper is written from the histologist's viewpoint.—*Ralph E. Cleland.*

ECOLOGY

Geo. D. Fuller, *Editor*

(See also in this issue Entries 2189, 2224, 2242, 2273, 2308, 2311, 2347, 2403, 2405, 2456, 2496, 2506, 2529, 2643, 2644, 2653, 2661, 2718, 2730, 2743, 2771, 2838, 2839, 2845, 2931, 2943, 2960, 2973, 3017, 3028, 3029, 3038, 3044, 3047)

GENERAL, FACTORS, MEASUREMENTS

2358. Anonymous. **The evolution and colonization of tidal lands.** Nature 116: 591. 1925.—This is a brief report of a discussion at the Southampton meeting of the British Association.—*O. A. Stevens.*

2359. Arenes, J. **Note sur la végétation des terrains basaltiques d'Evenos (Var).** [Vegetation of the basaltic soils of Evenos.] Bull. Soc. Bot. France 71: 615–619. 1924.

2360. [Balabaev, G. A.] Балабаев, Г. А. **Опыт позонального вертикального изучения сорной растительности в Средней Азии.** [Vertical zonation of weeds in central Asia.] (English summary.) Труды по Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14[1]: 293–358. *7 fig.* 1924–1925 (1925).—This paper presents in tabular form a detailed account of weeds found in samples of flax collected by the author in the mountains of Tashkent.—*M. Demerec.*

2361. Braun-Blanquet, J. **Études sur la végétation méditerranéenne. III. Concentration en ions H et calcimetrie du sol de quelques associations de la garigue languedocienne.**

[Studies on Mediterranean vegetation. III. H-ion concentration and calcium content of the soil of some associations of the Languedoc wasteland.] Bull. Soc. Bot. France 71: 639–647. 1924.—A discussion of the relation between H-ion concentration and calcium carbonate and the floristic compositions of the associations is given. The use of the ionoscope for determination of H-ion concentration is described.—*C. E. Moore.*

2362. Burollet, P.-A. **De la diversité des aptitudes sociologiques chez le Macrochloa tenacissima (L) Coss. et DR.** [Sociological diversity in M. tenacissima.] Bull. Soc. Bot. France 71: 649–651. 1924.—This grass, which is a climax species in northern Africa, has been observed by the author in various types of succession.—*C. E. Moore.*

2363. Dengler. [Rev. of: Rubner, Konrad, and Wilhelm Graf zu Leiningen-Westerburg. **Die pflanzengeographischen Grundlagen des Waldbaus.** (The phytogeographic basis of silviculture.) *273 p., 2 maps.* J. Neumann: Neudamm, 1924 (see Bot. Absts. 14, Entry 4285). Zeitschr. Forst.- u. Jagdw. 56: 183–188. 1924.—Rubner's book is a comprehensive compilation of all material relating to the subject. The 3 parts into which the book is divided and which are reviewed separately deal with climatic and edaphic factors as they are related to the occurrence and growth of species; the character of stands from the geographic point-of-view; and synecology, or the occurrence of species in forest associations. In discussing climatic factors the authors overdo the subject. In the discussion of edaphic factors, there is lacking a unity which makes the exposition fall rather flat. Rubner's assertion that the selection form is not natural in the forests of Europe is of interest. (See also Bot. Absts. 13, Entry 7620.)—*J. Roeser.*

2364. Dudgeon, Winfield, and L. A. Kenoyer. **The ecology of Tehri Garhwal: a contribution to the ecology of the Western Himalaya.** Jour. Ind. Bot. Soc. 4: 233–285. *12 fig. map.* 1925.—This area with rugged topography and altitudes ranging from 1,650 to 23,000 feet includes (1) Tropical zone up to 5000 feet with 80–90% of its rainfall during the summer, and with relatively high temperatures; (2) Temperate zone 5000–12,000 feet, with 70–80% of precipitation during the summer, and a cool winter with some snow; and (3) Alpine zone above 11,000 or 12,000 feet with short rainy summers and long cold winters with heavy snowfall. Corresponding with the climatic zones are 3 zones of vegetation: (1) Monsoon forests subdivided with *Shorea robusta* forests, 1000–2500 feet, and upper monsoon forests, 2000–5000 feet; (2) Broad sclerophyll forests, including *Quercus incana* forests, 4500–8000 feet, *Q. dilatata* forests 7500–9000 feet. *Q. semecarpifolia-Abies pindrow* forests 8500–12,000, *Pinus longifolia* edaphic forests 3500–6500 feet; and *Cedrus deodara* 5500–10,500 feet; (3) Deciduous and conifer forests of *Betula utilis* and *Abies Webbiana* passing to shrub formations and alpine meadows.—The climatic, edaphic and biotic factors are discussed in detail, the monsoon rainfall, the moisture-holding capacity of the soil, and the destructive activities of man being particularly important. The various forest types are considered with regard to their composition, aspect and successional relations, particular attention being given to the forests of *Pinus longifolia* and *Cedrus deodara*, which are considered as edaphic climax formations occupying areas that are exposed and well drained.—*Geo. D. Fuller.*

2365. Du Rietz, G. Einar. **Die Bedeutung der sekundären Standortsfaktoren. Eine Berichtigung.** [Secondary habitat factors.] Svensk Bot. Tidskr. 19: 232–235. 1925.—The work contains a reply to criticism in a very recent work of Th. Fries (Svensk Bot. Tidskr. 19. 1925.)—*O. Heilborn.*

2366. Forbes, R. D. **Light in the forest.** Amer. Forests and Forest Life 31: 330–334, 376–377. *8 fig.* 1925.—An article dealing with tolerance and intolerance of forest trees as regards shade.—*Chas. H. Otis.*

2367. Heilborn, O. **Contributions to the ecology of the Ecuadorian páramos with special reference to cushion-plants and osmotic pressure.** Svensk Bot. Tidskr. 19: 153–170. *8 fig.* 1925.—The work gives some data on the climatic conditions of the páramo-region or "regio andina" in Ecuador and the results of 2 special investigations, on cushion-plants and on osmotic pressure. The cushion-plants, here described, have a dense layer of imbricate leaves in small rosettes, covering a moist, peaty interior. The following species were studied: *Plantago rigida* Kunth, *Werneria humilis* H. B. K., *Draba Benthamiana* Gilg, *Arenaria dicranoides* H. B. K. and *Azorella* sp. It was found that such cushions may be formed through the growth of

one individual or by the union of several original individuals, even those belonging to different species (*Plantago rigida* and *Werneria humilis*). As the cushions grow, the branches and roots often die in the interior and are transformed into a peaty mass. The top branches of the stems are thereby transformed into independent individuals that develop adventitious roots. This is typical for *Plantago rigida* which assumes the shape of typical cushions only on moist ground. On dry ground it grows in dense flat mats. The other plant-cushions on Pichincha are also found on moist ground. The author regards it impossible that these cushions should be the result of a xerophilous adaptation. He suggests the following explanation: "the cushions in the páramos are formed by densely ramified plants of a mat-like growth, with small, often more or less coriaceous leaves in rosettes, when such plants grow in moist places. . . . . The structure and ecology of the cushion-plants in the Ecuadorian páramos is apparently best understood, if these cushions are regarded as a sort of Sphagnum-bog on a small scale, with the moss replaced by phanerogams of a certain xerophilous type." From the studies on osmotic pressure it was found that herbs on dry grounds in the páramos (3650–3850 m.) have, in the epidermis-cells of the leaves, a pressure of about 20 atmospheres, while 12–17 atm. pressure was found in some rosette-plants with thick tap-root, on dry ground, in herbs on moist ground, and in cushions, 25–29 atm. being found in bushes. At the level of Quito (2850–2950 m.) the pressures were slightly lower. The relatively high pressures in the páramos are apparently caused by the tropical insolation, low atmospheric pressure and strong winds.—*Author.*

2368. Heinricher, E. **Viehweide, ein am Formwechsel und an der Artbildung bei Pflanzen mitwirkender Faktor, Centaurea Jacea L., var. pygmaea, ein Beispiel hidfur. [Grazing as a factor in influencing change of form and species formation with special reference to C. Jacea L. var. pygmaea.]** Sitzungsber. Akad. Wiss. Wien (Math. Nat. Kl.) Abt. I. **134**: 7–20. *2 pl. 3 fig.* 1925.—The author has called small specimens of *C. Jacea* L. from areas in Stubia (Tyrol), closely grazed from spring to September, *C. Jacea* L. *pygmaea*. It is low (3–5 cm.), often unbranched or with a short oblique branch only. Seedlings in good garden soil and in sand exhibited a strong adherence to the *pygmaea* type. Other occurrences of such a dwarf type in pastures are cited. Similar dwarf types of *C. Babingtonii* Lacaita occur on the Isle of Wight. It is concluded that the pasture has acted as a selective factor on material weakened and dwarfed by grazing. This condition has affected the chromosomes and hence it has been transmitted to offspring. Under similar conditions *Prunella vulgaris* and *Scabiosa lucida* have shown similar changes.—*H. Cammerloher* (*translated.*)

2369. Klugh, A. B. [Rev. of: Lutz, F. E. **A study of ultraviolet in relation to the flower-visiting habits of insects.** Ann. New York Acad. Sci. **29**: 233–283. 1924; and Richtmyer, F. K. **The reflection of ultraviolet by flowers.** Jour. Optical Soc. America **7**: 151–168. 1923.] Ecology **6**: 179–181. 1925.—Gives a general discussion of the problems considered, the methods of investigation, and the results obtained.—*T. J. Fitzpatrick.*

2370. Knipowitsch, N. M. **Zur Hydrologie und Hydrobiologie des Schwarzen und des Asowschen Meeres. 2. Weitere Angaben über die Verteilung des Lebens im Schwarzen Meer. 3. Hydrobiologische Verhältnisse des Asowschen Meeres. [The hydrology and hydrobiology of the Black Sea and the Sea of Azof. 2. The distribution of life in the Black Sea. 3. Hydrobiological conditions in the Sea of Azof.]** Internat. Rev. Ges. Hydrobiol. u. Hydrograph. **13**: 4–20. 1925.—The first part of this paper reports further determinations of the depth at which the boundary between the lower hydrogen sulphide stratum of water and the upper aerated layer is found. This boundary lies approximately at 200 m. near the shore, and about 100 m. below the surface in the open sea. The absence of H_2S in the upper stratum is explained by the fact that this layer is constantly being aerated by the wind. The article further reports the oxygen, chloride and temperature relationships in the Sea of Azof, with suggestions as to the effect of these on the productivity of plankton, benthos and fish.—*Lowell E. Noland.*

2371. Müller, Karl. **Das Wildseemoor bei Kaltenbronn; ein Naturschutz gebeit. [The Wildsee moor near Kaltenbroon in the Black Forest: A nature preserve.]** *vi + 161 p. 19 pl.* G. Braun; Karlsruhe, 1924.] Nature **115**: 45. 1925.

2372. Oberholser, Harry C. **The relations of vegetation to bird life in Texas.** Amer.

Midland Nat. 9: 564–661. 1925.—The names of the plants and birds in each of the following associations are listed: Gulf shore, salt marsh, coast prairie, eastern riparian, eastern pine, eastern oak, eastern brush, eastern clearing, eastern agrarian, inland prairie, great plains upland, great plains riparian, great plains lacustrian, central chaparral, central riparian, central grass, southern brush, southern riparian, southern grass, desert riparian, alkali, mountain chaparral, mountain oak, mountain pinyon, mountain pine and spruce, mountain grass, and mountain mural associations.—*Sister M. Ellen.*

2373. Riggs, G. B. **Some sphagnum bogs of the North Pacific coast of America.** Ecology 6: 260–278. *1 pl.* 1925.—Seventy-eight bogs, from Coos Bay, Oregon, to the Sumagin Islands in Alaska have been examined. The term sphagnum bog is defined as that stage in the physiographic succession of an area during which its surface is entirely devoid of ordinary "hard" soil and is composed almost entirely of living *Sphagnum*, immediately under which is fibrous brown peat composed mainly or entirely of partially disintegrated *Sphagnum*, the habitat exercising a distinctly selective influence on its flora. The 2 plants in addition to *Sphagnum* that are most characteristic of the sphagnum bogs of the whole region are *Oxycoccus oxycoccus* and *Drosera rotundifolia*. The bogs examined vary in depth from 1 foot to more than 31 feet. Some of the bogs rest on glacial till, some on sand, some on blue clay, and some on gravel, some on soil formed *in situ*, and some on rock. The present bog state is in most cases clearly a succession on either lakes or swamps, though in some cases it may possible be a succession on forests. Physiological conditions in bogs are different from those in other habitats, and a number of factors must be considered in attempting to account for the selection of a flora by bog habitats. These are: low temperature of the substratum, low temperature of the air over the bog, difference between air temperature and soil temperature, lack of aeration in the substratum, deficiency in "available" nitrogen, water holding power of the peat, toxic substances in the substratum, hydrogen ion concentration, and to these should be added the lack of mineral constituents in the substratum. In their later stages bogs are invaded by forests. *Tsuga heterophylla* is usually the earliest invader of these bogs, though in some cases an almost pure stand of *Pinus contorta* is found in them, and in other cases *Pinus monticola* is the dominant tree, though other conifers are usually found with it.—*Author's Summary.*

2374. Stålfelt, M. G. **Die Lichtökonomie der arktischen Pflanzen. [Light economy of arctic plants.]** Svensk Bot. Tidskr. 19: 192–214. *7 fig.* 1925.—It has been assumed that arctic plants are capable of photosynthesis during the summer nights as well as during the day. However, this question is complicated, as the process depends, among other things, on the supply of CO_2 which depends on the width of the stomata, and this is much influenced by the weather. A comparison of the time during which the stomata are open in arctic and in more southern places is, therefore, of importance. The author made such comparisons with the aid of Molisch's method of infiltration. The degree of infiltration is given on an approximate scale from 1 to 10. Special experiments showed that certain liquids can be used only for special plants, the infiltration being influenced by the viscosity of the liquid. Thus, xylol is not viscous enough for *Parnassia palustris*, its leaves being infiltrated even when the width of the stomata is very small, and it is too viscous for *Astragalus alpinus*, in the leaves of which the liquid penetrates only when the stomata are quite open. In most cases, however, xylol may be used. For *Pinus silvestris* and *Picea excelsa* ether was used. The measurements were made in Sweden, partly in Scania (56°), partly in northern Lapland (68°).—It appears that the width of the stomata increases and decreases as the day-light changes. Curves were obtained that run symmetrically on both sides of 12 A.M. and 12 P.M. Casual changes in light, however, also influence the stomata. The author concludes that, if the soil contains enough water and transpiration is moderate, in the evening and in Lapland in the middle of the night, the stomata are open to $\frac{1}{3}$ or $\frac{1}{4}$ of their capacity. Arctic plants thus appear to be able to continue photosynthesis throughout the 24 hours of the day. Exact proof that such photosynthesis really takes place has, however, not yet been given.—*O. Heilborn.*

2375. Stamp, L. Dudley. **The aerial survey of the Irrawadda Delta forests (Burma). Notes embracing the observations of Messrs. A. W. Moodie, C. R. Robbins and C. W. Scott, compiled and edited with permission.** Jour. Ecol. 13: 262–276. *Pl. 7–12, 3 fig.* 1925.—These forests, a valuable source of timber and fuel, were surveyed with a view of drawing up a

working plan of exploitation consistent with continuous regeneration. The large number of streams with low muddy shores often covered with tangled worthless mangrove swamp, flooded by tides and by high water from the river, makes exploration by ordinary methods decidedly difficult. It was, however, found possible to distinguish several of the most valuable forest types from aerial photographs made at 10,000 feet, from hydroplanes. From these photographs, maps were made by the Conservator of Forests and the present author now points out the value of such exploration for ecological studies and gives hints of how the best results may be obtained.—The extent and character of flooding are factors determining the nature of the vegetation. Some of the principal types are (1) Dipterocarp evergreen forest on inland sandy areas not flooded at any time; (2) Dune forests of *Casuerina equisetifolia* and *Abizzia procera;* (3) Scrub forests on clay high levels; (4) Kanazo forests of the largest and most valuable of all the tidal trees of Burma, *Heritiera fomes*, on land flooded daily with salt or brackish water but where the water disappears from the surface for several hours daily; and (5) Mangrove forests of *Rhizophora mucronata, R. conjugata* and *Sonneratia apetala* on low levels flooded by salt water at all tides. It is noted that the majority of the tidal trees have pneumatophores of varying character. The advantages of aerial photographs taken late in the day when the shadows are long and of oblique photographs are pointed out.—*Geo. D. Fuller.*

2376. Stevens, O. A. **Some effects of the first fall freeze.** Amer. Midland Nat. 9: 14–17. 1924.

2377. Weiss, F. E. **Plant structure and environment with special reference to fossil plants.** Jour. Ecol. 13: 301–313. 1925.—A plea is made for the further investigation of the physiological anatomy of fossil plants. Anatomical evidence is cited which tends to show that the plants of the Coal Measures were members of a tropical swamp forest, the Calamites and Lepidodendron rooting under water and the Pteridosperms and Cordaitales being less aquatic and perhaps normally rooted in drier peat. The nature of the evidence is shown in the lacunar tissue and the absence of root-hairs in Calamites and Lepidodendron, the radial strands of tracheids in the latter, the xeromorphic leaves similar to those of many bog plants, the lacunar tissue in the roots of Lyginodendron and the mycorhiza of Cordaitales. The tropical climate in the regions of the Coal Measures is explained by supposing that the South Pole was then located east of South Africa and the North Pole in the northern Pacific Ocean.—*Geo. D. Fuller.*

2378. Wulff, Eugen. **Die Vegetation der Jaila-Gebirge der Krim. [The vegetation of the Jaila Mountains, Crimea.]** Bot. Jahrb. 59 (Beiblatt 134): 1–15. *Pl. 21–25.* 1925.—This is an extract from a longer paper to be published in Russian. The article treats of the following topics: I. The ecological factors.—II. The plant societies: (1) Remains of fir forests, (2) Beech forests; (3) Stunted bush; (4) Grass carpets; (5) "Läger" (where the sheep lie down); (6) Rock carpets; (7) Plains of broken stones; (8) Submerged places.—III. Absence of forests on the Jaila. Man as he herds his sheep on the mountains is the cause of the lack of forests.—IV. Developmental history of the Jaila flora; its affinities.—*K. M. Wiegand.*

FLORISTICS

2379. Baudyš, E. **Poznámky ke květeně okolí Hodkovic nad Mohelkou. [Notes on the flora around Hodkovic nad Mohelkou.]** Vědy Přirodni 5: (1–5). —The author lists the plants found in different localities around Hodkovic nad Mohelkou in Moravia.—*M. Demerec.*

2380. Dayton, W. A. **Flowers of the high places. II.** Amer. Forests and Forest Life 30: 548–551, 564. *21 fig.* 1924.—A popular article on the more striking examples of alpine flora of the mountains of the western U. S. A.—*Chas. H. Otis.*

2381. Fernald, M. L. **Persistence of plants in unglaciated areas of boreal America.** Mem. Amer. Acad. Arts and Sci. 15: 241–342. *73 maps.* 1925.—The Gaspé Peninsula and parts of the Magdalen Islands in eastern Quebec, the Torngat Mountains of northern Labrador, large portions of western Newfoundland and other smaller areas about the Gulf of St. Lawrence seem to have been unglaciated by the Pleistocene ice sheet. These areas possess many floristic peculiarities which are here described in detail. There are here some 80 endemic species mostly unrelated to any plants nearer than 2000 miles due west. The failure of these plants to migrate from these areas is taken to mean that at the close of the Pleistocene they

were already too old and conservative to pioneer. Those of them related to the flora of the Arctic Archipelago are considered to have made their migrations southward long before the last glacial advance in eastern America. Many of the arctic species found on these unglaciated areas are known in Europe only on the island of Nova Zembla, on the headlands of arctic Russia and in arctic Lapland.—Among the topics discussed in detail in consideration of this problem are (1) the distribution (mapped) of cordilleran and other western plants in eastern North America; (2) the possibility of dispersal from the west by winds, water, animals or other means; (3) the glaciation of the region of the Gulf of St. Lawrence and adjacent areas; (4) the occurrence of plants in proximity to glaciers; (5) the possibility of dispersal prior to the Wisconsin Glaciation; and (6) the relation of American and European arctic floras.—*Geo. D. Fuller.*

2382. Peattie, Donald Culross. **The flora of an old historic wall.** Amer. Midland Nat. 9: 381–383. 1925.—The author lists the plants found in the winter condition on an old stone wall on the premises of the Georgetown University, Washington D. C. Of the 23 species listed, 10 are old-world species.—*Sister M. Ellen.*

2383. Pehr, F. **Nachträge zur Flora des Jauntales in Unterkärnten.** [**Additions to the flora of the Jaun Valley in lower Carinthia.**] Oesterreich. Bot. Zeitschr. 74: 234–236. 1925.—A number of floristic observations are given in connection with a geological description of the region.—*H. Cammerloher (translated).*

2384. Pitcher, F. **Excursion to Mount Morton, Belgrave.** Victorian Nat. 42: 114–115. 1925.—A general account of plants observed is given.—*Wm. Randolph Taylor.*

2385. Rosenkranz, F. **Die Edelkastanie in Niederösterreich. II.** [**The chestnut in lower Austria.**] Oesterrlich. Bot. Zeitsch. 74: 217–224. 1925.—The chestnut [Castanea vesca] is found continuously about the "Steinfeld," along the Triesting-Geolsen canyon into the valley of the St. Poelten. Here it reaches up the alpine valley on the one side and through the Vienna forests on the other to the valley of the Danube. The chestnut does not seem to have been introduced by the Romans since it occurs where there are no traces of Roman occupation. It is more probably a Tertiary relic.—*H. Cammerloher (translated).*

2386. S[utton?], C. S. **The flora of Bass Strait.** Victoria Nat. 42: 118–121. *Pl. 4.* 1925.—A historical note of collections made in the territory is given, and a comparison made with the flora of neighboring Tasmania. A table shows the distribution of the more noteworthy species.—*Wm. Randolph Taylor.*

FOREST BOTANY AND FORESTRY

W. N. Sparhawk, *Editor*

(See also in this issue Entries 2299, 2309, 2310, 2314, 2320, 2323, 2324, 2328, 2330, 2331, 2332, 2346, 2363, 2364, 2366, 2375, 2378, 2385, 2586, 2587, 2621, 2779, 2783, 2788, 2795, 2796, 2803, 2819, 2840, 2849, 2893, 2965, 2990, 3013)

2387. Anonymous. **Congrés Forestier International de Grenoble.** [**International Forest Congress of Grenoble.**] Bull. Trimest. Soc. Forest. Franche-Comté et des Provinces de l'Est 16: 95–103. 1925.—The part taken by the Society in the International Forest Congress at Grenoble is outlined and also the history and accomplishments of the Society in forestry matters in eastern France.—*J. Kittredge, Jr.*

2388. Anonymous. **Fire hazards in national forests. Hearing on proposed regulations governing protection of Government sales areas.** Timberman 26[8]: 166, 168, 170, 172, 174. 1925.

2389. Anonymous. **Forêt domaniale d'Amance.** [**National forest of Amance.**] Bull. Trimest. Soc. Forest Franche-Comté et des Provinces de l'Est 16: 85–95. 1925.—The forest is located 15 kilometers northeast of Nancy at an altitude of 260 m. Oak, chiefly *Q. pedunculata,* and hornbeam are the chief species. The oaks suffer from spring frosts which kill back the growth and contribute to the infrequency of seed years. Hornbeam sprouts are abundant. The oak is maintained in the stand by making small openings in which seedlings can establish themselves. The rotation is 160 years with regeneration cuttings every 5 years and preparatory cuttings and thinnings every 10 years. Before the war the average annual yield of the high forest was 3.4 cu. m. per ha.—*J. Kittredge, Jr.*

2390. Anonymous. **Forstliche Tagung in Salzburg.** [**Forestry convention in Salzburg.** Wiener Allg. Forst. u. Jagdzeitg. **43**: 243–245, 249–250. 1925.—Several papers and discussions are summarized, including: (1) The "continuous forest" in theory and practice, with a description of the practice at Bärenthoren and Eberswalde; (2) The question of forest management in the high mountains, including economic and natural difficulties and stressing the need for more conservative cutting methods, and encouragement of natural reproduction; (3) The relation between alpine grazing and forestry.—*F. S. Baker.*

2391. Anonymous. **Forstschädlingsbekämpfung durch Flugzeuge.** [**Combatting forest insects by means of airplanes.**] Deutsch. Forstzeitg. **40**: 793–795. 1925.—To combat the owl moth and the nun moth in the Biesenthal forest (Prussia), calcium arsenate was dusted on the foliage from an airplane, at the rate of 4 tons to 6 sq. km. The experiment was a success. *W. N. Sparhawk.*

2392. Anonymous. **Montana's new state forest law. Provides for scientific forest production and watershed protection.** Timberman 26^{8}: 182, 184. 1925.

2393. Anonymous. **Old-growth Douglas fir volume table.** Timberman 26^{11}: 144. 1925.—A board-foot volume table, based on the Scribner rule, is given for large trees from the region of Snoqualmie Falls, Washington.—*Duncan Dunning.*

2394. Anonymous. **Port Orford white cedar.** Timberman 26^{9}: 62. *3 fig.* 1925.—This is a brief account of *Chamaecyparis lawsoniana.*—*Duncan Dunning.*

2395. Anonymous. **Progress report of forest research work in India, for the year 1922–23.** *123 p. 10 pl.* Govt. India Press: Simla, 1924.—Forest research work in silviculture, forest botany, forest economy, forest entomology, and forest chemistry is summarized. The activity in each section is described for each province separately, indicating the lines of work, the extent of new work, and the progress made on the old, with miscellaneous notes and observations.—*E. N. Munns.*

2396. Anonymous. **Progress report of forest research in India for the year 1923–24 including the administration report of the forest research institute, Dehra Dun.** *107 p.* Calcutta, 1925.—This is a summary of work under way at Dehra Dun and in the Provinces, subdivided under the headings of silviculture and working plans, forest botany, forest economy, forest entomology, and forest chemistry. Under each the details of a large number of experiments are given.—*S. B. Show.*

2397. Anonymous. **Washington state forestry conference. Proposed bill for taxation of reforesting lands.** Timberman 26^{11}: 68, 70, 72. 1925.

2398. Arnold, H. **Der Bodenwöhrer Waldbrand vom 7 Juni 1925.** [**The Bodenwöhr forest fire.**] Forstwiss. Centralbl. **47**: 683–691. *Fig. 1.* 1925.—This fire, the largest in the history of the Bavarian State forests, burned over 250 ha. of pine. It shows clearly the danger of growing extensive unbroken stands of pure, even-aged pine.—*W. N. Sparhawk.*

2399. Bailey, W. A. **Sal coppice and burning.** Indian Forest. **51**: 404–406. 1925.—Burning after cutting resulted in better sprouts than where not burned, though the large trees failed to sprout.—*E. N. Munns.*

2400. Bansi. **Zur Provenienzfrage der Roterle.** [**The seed source problem of red alder (Alnus glutinosa).**] Zeitschr. Forst- u. Jagdw. **56**: 166–168. 1924.—In the forest of Klein-Naujock, in eastern Prussia, the older stands of red alder, which is the principal species, are conspicuous for their good growth while nearly all of the younger stands are decidedly decrepit. Since 1866, the seed used has been purchased, and the foreign seed from southern France and Hungary, rather than the effect of local climatic and soil factors, is responsible for the poor results. Stock of local origin should be used to replace the dying young stands. This must be accomplished under a form of shelterwood protection provided either by coppice growth or by longer-lived individuals of the present stand.—*J. Roeser.*

2401. Barker, S. O. **Garnering among the evergreens.** Amer. Forests and Forest Life **30**: 658–660, 670. *6 fig.* 1924.—The methods of gathering tree seed in the southwestern Rocky Mountains are described.—*Chas. H. Otis.*

2402. Barnard, B. H. F. **Federated Malay States. Report on forest administration for the year 1924.** *41 p.* Fed. Malay States Govt. Press: Kuala Lumpur, 1925.—At the end of the year the area of reserved forest was 2,998,963 acres, or 16.8% of the land area of the States.

It is planned to reserve additional lands in the near future. Besides protecting the forests against fire and trespass, considerable silvicultural work was carried on, especially improvement cutting to favor the growth of the more valuable species. The total output of timber and fuel was 877,215 tons, of which 322,698 tons came from reserved forests. Firewood and charcoal amounted to 716,222 tons. Other important products are damar (from *Balanocarpus* spp.), gutta percha (*Palaquium* spp.), jelutong (*Dyera* spp.), and canes. Research was carried on in forest botany, wood technology and utilization, silviculture, and minor products. The usual tables showing forest areas, operations, production, revenues and expenditures are appended.—*W. N. Sparhawk.*

2403. Bates, C. G. **How willows stop erosion.** Amer. Forests and Forest Life **31**: 200. *2 fig.* 1925.—This is a short account of an experiment at the Fremont Forest Exp. Sta. on Mount Manitou, Colorado.—*Chas H. Otis.*

2404. Bazala, Ernst. **Die Hubersche Formel und die Möglichkeit der Verbesserung ihrer Resultate.** [Huber's formula and the possibility of improving its results.] Centralbl. Gesam. Forstw. **49**: 195–208. 1923.—Huber's formula for computing the volume of trees and logs generally gives too low values. The accuracy of the formula can be increased by measuring the diameter 2% below the middle, instead of at the middle of the stem or log.—*W. N. Sparhawk.*

2405. Bentley, M. **The conflict on the Texas plain.** Amer. Forests and Forest Life **30**: 515–520, 542. *12 fig.* 1924.—This is a popular article dealing with the meeting ground of the trees from the Rocky Mountain region, the Mexican highlands, the Atlantic forest, and the native trees of Texas.—*Chas. H. Otis.*

2406. Berry, J. B. **Score cards for trees and woodlands.** Amer. Forests and Forest Life **31**: 87. 1925.—A score-card system is described as being a new way of teaching elementary forestry.—*Chas. H. Otis.*

2407. Bertog, Backe, Harbach, und Schwappach. **Aufbewahrung von Saateicheln.** [Storage of acorns.] Deutsch. Forstzeitg. **40**: 1090–1091. 1925.—Acorns should be protected from overheating and from drying; if covered, even severe frost does not injure them. They may be stored on the bare ground and covered with leaves or with sand or fine gravel. They should not be kept inside a building or under a tight cover. Where possible, fall sowing is preferable to winter storage.—*W. N. Sparhawk.*

2408. Boushkoff, Ivan. **Forests of the Russian Far East.** Timberman **26**[11]: 130, 132, 134, 136, 138. *Map.* 1925.

2409. Briggs, Z. M., Chairman. **Report of Committee 7–1—Track service records.** Proc. Amer. Wood Preservers' Assoc. **20**: 246–252. 1924.—This contains data from more railroads and on more woods than previous reports have covered.—*Walter H. Snell.*

2410. Brown, W. R. **Brush burning in northern New Hampshire.** Jour. Forest **21**: 54–60. 1923.—The logging cost in a spruce, fir, and hardwood stand in northern New Hampshire was approximately 20% higher where cutting of long logs was followed by spring brush burning, 16% higher where the brush was burned as the logs were cut, and 8% higher where 4-foot pulpwood was cut and the brush burned immediately. Immediate burning is possible only in winter and spring. As a fire protective measure, brush burning in New England logging operations does not seem necessary. Brush disposal for other reasons than fire protection offers an interesting field of study.—*Philip C. Wakeley.*

2411. Carhart, Arthur H. **Recreation in forestry.** Jour. Forest. **21**: 10–14. 1923.—Recreation is a product of the forests, and the present demand for it will increase. It behooves foresters to make their forests yield the utmost in recreational as well as in material value.—*Philip C. Wakeley.*

2412. Carlisle, Geo. T., Jr. **Management of privately owned timberlands in Maine.** Jour. Forest. **21**: 44–47. 1923.—Most pulp and lumber manufacturers in Maine, if they own timberlands, employ foresters. Timber cut under permit is frequently marked by a forester in the employ of the land owner. Judicious use of the diameter limit has proved successful. Selection of species is practiced where possible. Ambitious planting programs, good fire protection, and cooperation between owner and operator are common.—*Philip C. Wakeley.*

2413. Cary, Austin. **The future of New England forests.** Jour. Forest. **21**: 15-24. 1923.—Conditions are especially favorable for forestry in New England. Private forestry

promises well, especially in the white pine region in central New England. Competition from the South must not be overlooked.—*Philip C. Wakeley.*

2414. Cary, N. LeRoy. **Ponderosa pine.** Timberman 26[10]: 86. *1 fig.* 1925.—This deals with *Pinus ponderosa.—Duncan Dunning.*

2415. Channer, F. F. R. **Working plans for sal forests.** Indian Forest. 51: 511–517. 1925.—Opposition to the shelterwood compartment system has been due to misunderstanding. The plan is not rigid and while in some places bad silviculture may develop, the result will be generally good. The selection system is to be used under some conditions.—*E. N. Munns.*

2416. Chaturvedi, M. D. **Taungya in Gorakhpur.** Indian Forest. 51: 417–419. 1925. —The taungya system has not yet had sufficient trial to justify its abandonment in the coppice forests; of late there has been notable success.—*E. N. Munns.*

2417. Cieslar, [Adolf]. **Hat die Omorikafichte (Picea Omorica Panč.) eine forstwirtschaftliche Bedeutung und Zukunft?** [Has Picea omorica a future as a forest tree?] Centralbl. Gesam. Forstw. 49: 81–85. 1923.—Although one of the principal conifers of central Europe in the tertiary period, this spruce was not discovered until 1875, and it occurs naturally only in the Drina valley of Serbia and northeastern Montenegro. The only stand of any size is a 60-ha. stand near Višegrad. According to A. Karolyi (in Šumarski list, 1921: 99–111) the species is gradually becoming extinct because it can thrive only in diffuse light. The sharply pyramidal crown of older trees is a result of adaptation to the light requirements. The tree appears doomed to die out in natural forests; it may be maintained in artificial, managed stands, but as it produces only 60–70% as much wood as *P. excelsa* on the same sites, and that of rather inferior quality, its maintenance is hardly justified from the standpoint of timber production. As an ornamental tree it is exceedingly valuable and should be widely propagated.—*W. N. Sparhawk.*

2418. Cieslar, [Adolf]. **Untersuchungen über die wirtschaftliche Bedeutung der Herkunft des Saatgutes der Stieleiche.** [Investigations on the economic importance of the source of seed of pedunculate oak.] Centralbl. Gesam. Forstw. 49: 97–149. *Fig. 4–6.* 1923. —Because of the diversity of climate within the wide natural range of *Quercus pedunculata*, there must be several distinct climatic races of the species. In 1905, the Austrian Forest Exp. Sta. planted 21 lots of 200 one-year seedlings that had been grown from acorns collected from 21 localities over a range of 15° in latitude and 60° in longitude. This paper presents the results of observations and measurements to 1923. The heaviest acorns came from the warmest localities, and seedlings from the heavier acorns grew the most rapidly for 10–12 years, but by the 18th year the influence of size of seed upon vigor of the seedling had entirely disappeared. At the end of the period, oaks from fast growing mother trees in regions with climates similar to that of Vienna were the tallest. Oaks from parents in regions of considerably different, particularly milder climates, grew more slowly. The stem and crown forms of the descendants were plainly inherited from the mother trees, confirming the findings of Hauch in Denmark. The largest proportion of straight stems were produced from acorns from climates similar to that at the station, while several lots from much milder regions produced no straight stems at all. Acorns from cooler regions produced frost-hardy trees; those from warmer regions were badly injured by late frosts. The varieties characterized by small crowns produced straighter stems, and stems with larger average diameters than the large-crowned oaks; moreover, more trees can be grown on a given area if the small-crowned races are planted. Size of leaves appears to be a good indicator of the vigor of the tree, for oaks with large leaves grew faster than those with small leaves. Oaks from the milder regions put out new shoots late in the summer, and suffered from mildew (*Microsphaera quercina*); those from cooler regions did not. Time of leafing-out in the spring appears to be an individual inherited characteristic with oaks instead of being governed by the climatic race as with conifers. The foliage of oaks from continental climates turned brown earliest in the fall, while those from oceanic climates stayed green longer. The different lots of trees showed considerable variation in dropping or retaining their dead foliage during the winter. In collecting acorns for planting, it is extremely important to get them from carefully selected mother trees in regions with the right kind of climate.—*W. N. Sparhawk.*

2419. Cieslar, [Adolf]. [Rev. of: Bühler, Anton. **Der Waldbau nach wissenschaft-**

licher Forschung und praktischer Erfahrung. II Band. (Silviculture, based on scientific investigation and practical experience. Vol. 2.) *679 p.* E. Ulmer: Stuttgart, 1922.] Centralbl. Gesam. Forstw. 49: 55–56. 1923.—An especially valuable feature of the book are the detailed references to the results obtained by the forest exp. stations of Germany, Switzerland, and Austria. The author not only presents a systematic account and evaluation of existing knowledge of silviculture, but also offers many suggestions for future research.—*W. N. Sparhawk.*

2420. Cline, A. C. **Pine pure or pine in mixture.** Amer. Forests and Forest Life 30: 557–558. *3 fig.* 1924.—This is a plea for planting white pine in mixture with broad-leaved species.—*Chas. H. Otis.*

2421. Cook, H. O. **Sustained yield in certain forest localities in Massachusetts.** Jour. Forest. 21: 48–53. 1923.—The wood-using industries (box and toy factories) in Plymouth and northern Worcester counties have run on a local, sustained yield of timber for more than 50 years. Most of the wood used is white pine, cut in small amounts from scattered woodlots. Reproduction is generally good. The annual cut of the 2 localities is 40,000,000 board feet.—*Philip C. Wakeley.*

2422. Copleston, W. E. **Report of the forest administration in the Bombay Presidency including Sind, for the year 1923-24.** *221 + 3 p.* Bombay, 1925.—Working plans are being made for several units on the 14,970 sq. miles of forests. Fire protection was 96% successful. The area closed to grazing was 2316 sq. miles; on the balance 2,438,889 animals grazed. Natural reproduction on flooded areas was satisfactory. Taungya plantations continued successful. Experiments were made in teak and eucalyptus germination. The report contains a review of the past 5 years' work.—*S. B. Show.*

2423. Cornwall, Geo. F. **Cruising timber from the air.** Timberman 26[9]: 52–53. *6 fig.* 1925.

2424. Coventry, B. O. **Devastation of the Changa Manga plantations by fungus attack.** Indian Forest. 51: 517–552. 1925.—The 10,000 acre plantation of *Dalbergia Sissoo* was established between 1866 and 1880, and has been cut over several times under coppice. After several years there were serious losses from windbreak. *Fomes lucidus*, a root parasite, has been found to be the cause. Practically all the stools are infected, so that the plantation is almost a total loss, and the area is now reverting to grass. It is suggested that clearing and cultivating for a few years, followed by *taungya* plantations, will eradicate the disease. Some other cutting method than coppice must be practiced.—*E. N. Munns.*

2425. Craighead, F. C. **Another story from tree rings.** Amer. Forests and Forest Life 30: 681. *5 fig.* 1924.—This deals with the effect upon growth rings of attacks by defoliating insects.—*Chas. H. Otis.*

2426. Crosby, William. **Commercial timbers of the Philippine Islands.** Timberman 26[10]: 78, 80. 1925.

2427. Dana, Samuel T. **What the Northeastern Forest Experiment Station should aim at.** Jour. Forest. 21: 40–43. 1923.

2428. Dengler. **Zur Sturmbeschädigung der Kieferntriebe im July 1922.** [Damage to pine shoots by the July storm of 1922.] Zeitschr. Forst- u. Jagdw. 56: 106–107. 1924.—The author agrees that the injury to the new pine shoots and the breaking and fall of needles was due to the heavy wind and rain storm rather than to insects. Junack's contention that the injury to the needles was due to *Rhizotrogus solstitialis* is explained by the fact that the young needles continued to grow (since growth occurs at the bases and not at the tips) after being broken at the sheath and gave the appearance later on of having been eaten by insects. (See also Bot. Absts. 14, Entries 8607 and 8714.)—*J. Roeser.*

2429. Dr. **Bericht uber die 63. Tagung des Sächsischen Forstvereins in Zschopau.** [63rd meeting of the Saxon Forestry Association.] Deutsch. Forstzeitg. 40: 823–826. 1925.—Papers on silviculture in the Saxon State forests and on the problem of settling permanent forest workers on the State and private forests are briefly summarized.—*W. N. Sparhawk.*

2430. Dumas. **Une question.** [A question.] Bull. Trimest. Soc. Forest. Franche-Comté et des Provinces de l'Est 16: 110–115. 1925.—The paper deals with the problem of utilizing the small sized wood in the French forests of silver fir. At present large quantities of poles are

being imported from Germany. It is suggested that a good crop of poles might be got by thinning dense stands in France. In several communities trees are sold by the piece, and the smaller trees are bought by the local inhabitants and worked up into pulp wood. The methods and possibilities of preservation are also discussed.—*J. Kittredge, Jr.*

2431. Durland, W. D. **The pearl of the Antilles.** Amer. Forests and Forest Life **30:** 713–715. *5 fig.* 1924.—The original forests of Porto Rico have been almost completely destroyed, but reforestation of the denuded land has recently been begun.—*Chas. H. Otis.*

2432. Eckstein. **Welche Mittel gegen Wildverbiss können unbedenklich benutzt werden?** [Means of protection against browsing by wild game.] Deutsch. Forstzeitg. **40:** 1075–1077. 1925.—Ten different preparations are described which may be smeared on the twigs and buds to render them unpalatable.—*W. N. Sparhawk.*

2433. Erickson, L. T., Chairman. **Report of Committee 7-3-1—Paving blocks.** Proc. Amer. Wood Preservers' Assoc. **19:** 169–185. 1923.—Specifications for wooden paving blocks are given.—*Walter H. Snell.*

2434. Evenden, James C. **Spraying for control of forest insects.** Timberman **26⁹:** 51. *4 fig.* 1925.—Spraying with arsenate of lead and linseed oil to insure adhesion successfully protected lodgepole pines from sawfly and needle tyer larvae along 5 miles of road in Yellowstone National Park.—*Duncan Dunning.*

2435. Evenden, James C. **The mountain pine beetle.** Timberman **26¹¹:** 62. *2 fig.* 1925.

2436. Fankhauser, F[ranz]. **Guide pratique de sylviculture.** [Practical guide to silviculture.] 3d French edition (translated by Petitmermet.) *348 p., 1 pl., 124 fig.* Payot & Cie.: Lausanne et Geneve, 1921.—This guide is intended as a text book for forest ranger courses and agricultural schools. Following an introductory section, there are chapters on environmental factors, forest botany, silviculture, exploitation, forest protection, surveying, and forest construction. [See also this issue, Entry 2522.]—*W. N. Sparhawk.*

2437. Forbes, R. D. **The roots of trees.** Amer. Forests and Forest Life **31:** 201–204, 234, 236. *11 fig.* 1925.

2438. Gehrhardt, Ernst. **Ueber Durchforstung von Fichtenbeständen.** [Thinning spruce stands.] Deutsch. Forstzeitg. **40:** 889–890. 1925.—Thinning for rapid growth ("Schnellwuchsbetrieb") is advocated. Thinnings should start after the trees reach about 6 m. in height, and should be repeated at least every 3 years, removing practically all except the dominant trees. For Site I, spruce stands thinned by this method should in 100 years produce 236 cu. m. more timber than those moderately thinned, while beech should produce 157 cu.m. more in 140 years. If the crowns have plenty of growing space from their youth on, spruce will increase its diameter and height growth in response to thinnings long after the 70th year. This is generally not the case with trees that have grown in crowded stands.—*W. N. Sparhawk.*

2439. Gleixner und Petschke. **Wie bringt man Ausbaggerungsflächen mit Kiefern in Bestand.** [How may dredge dumps be afforested with pine?] Deutsch. Forstzeitg. **40:** 879–880. 1925.—Gleixner suggests planting strong 1 or 2 year-old pines in prepared holes filled with turf or moor soil, or, in case this is not available, the planting area should be covered with leaves and twigs for 2–3 years and cultivated prior to planting. Lupine should be sown among the pines.—Petschke recommends planting white alder for a first crop, as it is easy to establish, grows rapidly, and improves the soil, especially through its ability to extract nitrogen from the air.—*W. N. Sparhawk.*

2440. Glover, H. M. **Some private forests of Czechoslovakia and Austria.** Indian Forest. **51:** 435–446. *Pl. 25–26.* 1925.—For representative private forests, the history, silvicultural practices, and working plans are outlined.—*E. N. Munns.*

2441. Glück, Karl. **Zur Dauerwaldfrage.** [The question of continuous forests.] Wiener Allg. Forst- u. Jagdzeitg. **43:** 211–213. 1925.—This is a popular description of the "Dauerwald" system.—*F. S. Baker.*

2442. Golding, G. H. A. R. **Cultivation of conifers in the Southern Shan States.** Indian Forest. **51:** 424–425. 1925.—General observations are given of plantations of *Cupressus macrocarpus, Chamaecyparis lawsoniana, Pinus canariensis, P. halepensis,* and *P. pinea.*

Only the 1st has done well in the field. Lawson cypress is of value ornamentally.—*E. N. Munns.*

2443. Greeley, W. B. **The timber situation of the United States, a background for wood preservation.** Proc. Amer. Wood Preservers' Assoc. **19**: 207–218. 1923.—Future timber requirements can be met by substitution, closer utilization, increase of growth upon forest lands, and wood preservation. There are great opportunities for the wood preserver in the utilization of northern New England and New York hardwoods.—*Walter H. Snell.*

2444. Harbach. **Mischwald-Begründung.** [**Establishment of mixed stands.**] Deutsch. Forstzeitg **40**: 1045–1046. 1925.—The growth of young forest plantations, even on poor soil, can be stimulated by growing rye between the rows.—*W. N. Sparhawk.*

2445. Hawelik, Karl. **Technische Eigenschaften des Nonnenholzes.** [**Technical properties of wood killed by the nun moth.**] Centralbl. Gesam. Forstw. **49**: 185–195. *Fig. 8–16.* 1923.—Salvaging the large quantities of spruce timber killed by this moth (*Liparis monacha*) in central Europe entails a heavy loss because of the general belief that the wood is of inferior quality. Spruce and fir generally die after defoliation because they do not have sufficient reserves of starch and other foods to produce enough foliage to protect the cambium against over-heating by the sun. The wood of moth-killed trees contains less starch and more water than that of green trees, but loses the water if allowed to stand. It remains sound as long as the bark is whole and not attacked by bark-beetles. The gray color of wood sawed from moth-killed trees results from the way the saw teeth cut the spring and summer wood fibers; it is not evident when the wood is planed, or sawed with the right kind of saw. Wood deficient in starch holds its shape better than ordinary wood, hence is preferable for certain purposes. As spruce is not used for heavy construction, the slight loss of strength is not serious. If dried and protected from rot, there is no loss in heat value. If properly handled, moth-killed spruce is even better than green-cut timber.—*W. N. Sparhawk.*

2446. Herrmann. **Bericht über die Waldsamenernte 1925.** [**Report on the 1925 forest seed crop.**] Deutsch. Forstzeitg. **40**: 1031–1033. 1925.—Details are given regarding the yield in different parts of Germany of the principal kinds of tree seed. In general, the crop was poor for all species.—*W. N. Sparhawk.*

2447. Hohenadl, W. **Buchführung und Holzmessung in der Forstwirtschaft.** [**Bookkeeping and timber measurement in forestry.**] Forstwiss. Centralbl. **47**: 557–569, 655–671. *Fig. 1–5.* 1925.—The paper deals with the need for rationalizing forest management and technique, that is, basing it upon mathematically determined results. This requires careful measurements and balancing of costs and returns at all stages. The methods commonly used heretofore in preparing stand, volume, growth, and yield tables and converting factors involve considerable inaccuracy, because they are usually based on the assumption that trees of the same diameter and height have the same form. This is not the case, for the form varies with growing conditions. Not only should the factor of form be taken into account, but sample trees used for preparing tables should be selected by statistical methods.—*W. N. Sparhawk.*

2448. Horrocks, H. E., Chairman. **Report of Committee 5–1–1—Treatment of Douglas fir.** Proc. Amer. Wood Preservers' Assoc. **19**: 219–228. 1923.—Tests of the effect of perforation on resistance to compression perpendicular to grain of treated Douglas fir ties showed a reduction of 17% immediately after treatment, which is reduced to 5% or less after 6 months. —*Walter H. Snell.*

2449. Hunt, George M. Chairman. **Report of Committee 8—Steam treatments.** Proc. Amer. Wood Preservers' Assoc. **19**: 340–357. *4 fig.* 1923.—The report gives partial results on the effect of steaming wood upon absorption and penetration of preservatives and upon the strength of wood. It also presents data on the maximum pressure and time of steaming, the rate of heat transfer in the wood, and the effect of steaming and vacuum treatment upon the moisture content of wood.—*Walter H. Snell.*

2450. Hunt, George M., Chairman. **Report of Committee No. 8—Steam treatments.** Proc. Amer. Wood Preservers' Assoc. **20**: 265–284. 1924.—Steaming green western pine poles 6 hours at 20 pounds pressure gave the maximum heating effect with slight reduction of moisture content. On partially and fully seasoned material the moisture content was raised even when the steaming was followed by vacuum treatment. Green red oak lost moisture in the process,

but was not seasoned, for 45% of the moisture was left. Serious checking resulted. Steaming coast Douglas fir ties did not appreciably affect absorption. Information is presented on present steaming practices.—*Walter H. Snell.*

2451. Isaac, L. A. **Proper spacing for Douglas fir forests.** Timberman 26[12]: 143. *1 fig.* 1925.

2452. Ivory, Edward P. **California white pine.** Timberman 26[8]: 252. *2 fig.* 1925.—This is a brief description of *Pinus ponderosa.*—*Duncan Dunning.*

2453. Jensen, C. F. **Skovfyrren i det nordlige Midtjylland.** [Scotch pine in the northern part of central Jutland.] Dansk Skovfor. Tidsskr. 10: 311–356. *20 fig.* 1925.—In the middle of the 19th century there was much interest in forest planting. Scotch pine was largely utilized, but with unsatisfactory results. An examination of the remnants of plantations and of the reproduction around Viborg allows the conclusion that a new race is being developed which is suited to the rigorous climate.—*W. H. Meyer.*

2454. Joy, Geo. C. **Meteorology in forest fire control.** Timberman 26[9]: 130. 1925.

2455. Joyce, A. R. Chairman. **Report of Committee on properties of treated wood.** Proc. Amer. Wood Preservers' Assoc. 19: 359–379. 1923.—Reports of 4 sub-committees summarize the mechanical properties of treated wood, the electrical conductivity of treated wood, the inflammability of treated wood and corrosion of fastenings by preservatives. Bibliographies are given for certain of these topics.—*Walter H. Snell.*

2456. Juul, J. G. **Furuens utbredelse i Finnmark og Troms.** [The range of pine in Finnmark and Troms.] Tidsskr. Skogbruk 33: 359–441. *18 fig.* 1925.—In former times pine spread over much larger areas in the parishes of Finnmark and Troms in northern Norway than it occupies at present. Many evidences of former stands can be found in places where now there are few or no pines. For each of 8 districts the amount, character, and growth of the forest and its origin and former extent discussed. The upper limits are lower and the lower limits are higher than formerly. The widest range occurred at the end of the subboreal era. In the following cooler and moister subatlantic era, the recession began. This recession can be traced back to about 500 B.C., and has proceeded slowly since then. Hagem's temperature limits for the germination of pine seed help to explain the recession down the mountain slopes. In most parts of Finnmark and Troms there are pines above their climatic limit. Mistreatment of the forest is not a cause as it is claimed to be in southern Norway. The raising of the lower limits of pine growth has occurred in relatively recent times, that is, since colonization. The single tree selection system of cutting has thinned out the stands, while the condition of the forest floor at lower elevations is unfavorable to natural reproduction, and is a primary cause of the recession of the forest. On burns reproduction is excellent, but on raw humus it is very poor.—*W. H. Meyer.*

2457. Keig, J. R. Chairman. **Report of committee 5–9—Inspection.** Proc. Amer. Wood Preservers' Assoc 19: 229–243. 1923.—This is an outline of procedure for inspecting treated wood.—*Walter H. Snell.*

2458. Künkele, und Geiger. **Hangrichtung (Exposition) und Pflanzenklima.** [Direction of slope (aspect) and plant climate.] Forstwiss. Centralbl. 47: 597–606. *1 fig.* 1925.—There is illustrated a method of plotting on a polar coordinate chart the relationship between aspect and soil temperatures for each month of the year. The Bavarian Forest Exp. Sta. plans to conduct an intensive investigation into the effect of aspect upon various climatic factors affecting tree growth.—*W. N. Sparhawk.*

2459. Laist, Theodore F. **The market for treated lumber from the view point of a lumberman.** Proc. Amer. Wood Preservers' Assoc. 19: 41–49. 1923.—Much energy has been spent in recommending the use of treated wood, yet there is a reluctance on the part of retailers to stock treated materials.—*Walter H. Snwll.*

2460. Lamb, Frank H. **Legalized forest destruction.** Timberman 26[9]: 49–50, 217–218. 1925.—This is a discussion of slash disposal in the Douglas fir region of Oregon and Washington.—*Duncan Dunning.*

2461. Langworthy, C. F. **The American papaw.** Amer. Forests and Forest Life 30: 621–623. *3 fig.* 1924.—This article describes *Asimina triloba* and considers at some length the edibility and preparation of its fruit.—*Chas. H. Otis.*

2462. Leibner, E. E. **Famous trees of England.** Amer. Forests and Forest Life **31**: 74–76. *4 fig.* 1925.—This article deals with famous old oaks of England.—*Chas. H. Otis.*

2463. Levaković, A. **Ueber einige Probleme in der Zuwachsprozentlehre.** [**Some problems connected with the increment percent theory.**] Centralbl. Gesam. Forstw. **49**: 209–238. 1923.—The various formulas for computing growth percent (Pressler's, Kunze's, Merker's, Schubert's, Schiffel's, and Leibnitz') are critically examined. For getting the average annual growth percent during a period of 10 years or more, a simple interest formula gives exceedingly inaccurate results. Leibnitz' formula, $p. = 100\left(\sqrt[n]{\frac{V}{v}} - 1\right)$, is correct, while Kunze's, $p = \frac{200\,(V - v)}{V(n-1) + v\,(n+1)}$, and the author's modification, $p = \frac{200\,(V - v)}{V\,(n-2) + v\,(n+2)}$ give fairly close results for periods less than 10 and over 10 years, respectively. Baur's formula for current annual growth percent is based on an erroneous assumption, and Schneider's and Breymann's formulas are difficult to apply because of the difficulty of measuring accurately the width of a single ring.—*W. N. Sparhawk.*

2464. Liese. [Rev. of: Kienitz, M. **Deutsche Harznutzung. III. Die Kiefernharznutzung in Deutschland.** (**German resin production. III. The production of pine resin in Germany.**) *12 p. 2 fig.* Deutsche Harzgesellschaft: Berlin, 1923.] Zeitschr. Forst- u. Jagdw. **56**: 114–116. 1924.—A brief synopsis is given of Kienitz's explanations of 8 important objections that have been raised against bleeding trees for resin. Although propaganda, Kienitz's work is of great scientific value and is a worthy addition to the literature of the resin industry. (See also Bot. Absts. 13, Entry 4195.)—*J. Roeser.*

2465. Lovejoy, P. S. **State land policy in Michigan.** Jour. Forest. **21**: 1–9. 1923.—The author discusses the relation of public opinion and prejudice to the utilization of land for timber growing, and outlines the results hoped for from the economic land survey in Michigan. —*Philip C. Wakeley.*

2466. Luban. **Zur Aufforstung der Grosskahlschläge im Eulengebeit.** [**Reforestation of clear cut areas.**] Deutsch. Forstzeitg. **40**: 849–850. 1925.—To improve the soil as well as to reduce the fire hazard, broadleaved trees should be planted in mixture and in pure strips through the pine forests. Beech cannot easily be grown on some sites, while birch will not afford the requisite degree of fire protection. American red oak (*Q. rubra*, or *Q. borealis*) is recommended, as it does well on poor soil, grows rapidly, produces a heavy leaf litter, and reproduces readily from seed and sprouts.—*W. N. Sparhawk.*

2467. McLaughlin, B. E. **Yucca trees of the Mojave Desert.** Amer. Forests and Forest Life **31**: 107–108. *4 fig.* 1925.—This is a popular article on *Yucca Whipplei.*—*Chas. H. Otis.*

2468. Marsh, L. **Report of forest administration in the Andamans for the year 1923–24.** *xviii + 87 p.* Calcutta, 1925.—A review of the past 5 years' work is given. Cutting operations cover only a small part of the forest area. Clear felling is little used. Little is being done in research or in working plan preparation. There is no fire problem.—*S. B. Show.*

2469. Mattoon, Wilbur R. **Common forest trees of Florida. How to know them.** *96 p. Illus.* Florida Forestry Association: Jacksonville, 1925.—This booklet contains brief, non-technical descriptions of 93 of the more valuable or abundant native species.—*W. N. Sparhawk.*

2470. Mattoon, W. R. **Grantland Forest.** Amer. Forests and Forest Life **31**: 103–104. *2 fig.* 1925.—Probably the oldest planted pine forest of any size in the South is near Griffin, Spalding County, Georgia. Planted in 1892, it consists mostly of *Pinus echinata*, with a few *P. taeda.*—*Chas. H. Otis.*

2471. Mayes, W. **Progress report on forest administration in the Punjab for the year 1923–24.** *5 + 6 + 49 + cccxcv p.* Lahore, 1924.—The report details the work of the forest department, including a summary of the past 5 years. The area of forests decreased during the year by 849 square miles. Planting to control erosion was continued. Incendiary fires decreased. Grazing administration is a serious problem. A Forest Board was organized to advise with the government.—*S. B. Show.*

2472. Merriam, Lawrence C. **Sequoia gigantea in the Douglas fir region.** Timberman

26^8: 49. *3 fig.* 1925.—This is an account of several planted specimens many miles north of the tree's natural range.—*Duncan Dunning.*

2473. Merten. **Verwaltung und Wirtschaft.** [**Administration and management.**] Zeitschr. Forst- u. Jagdw. **56**: 93–101. 1924.—This is a discussion of the suggestions that state forest administration be withdrawn from political control and entrusted to independent forest departments. Bureaucratic narrowness, excessive paper-work and burdensome side issues prevent highest accomplishment under state control in forestry.—*J. Roeser.*

2474. Michotte, Felician. **Etude sur les incendies de forêts.** [**Study on forest fires.**] *64 p. 1 fig.* Institut de la Science du Feu: Paris, 1925.

2475. Miller, J. M. **Methods of estimating barkbeetle losses.** Timberman 26^8: 186, 188. *2 fig.* 1925.—For control work a 100 % estimate of infested trees is made by running parallel strips 4–10 chains wide, at a cost of 3–6 cents an acre. Where less accuracy is required, estimates are made by mapping infested trees visible within a radius of 2 miles or less from prominent points and ridges. Sample plots intensively cruised give correction factors for unseen trees, average dimensions, and other data. In other cases, infested trees are counted on sample strips.—*Duncan Dunning.*

2476. Muenscher, W. C. **A sequoia tree far from its home.** Amer. Forests and Forest Life **30**: 617. *1 fig.* 1924.—A 60-foot *Sequoia gigantea* growing at Aurora, New York is described.—*Chas. H. Otis.*

2477. Murphy, L. S. **Forest fire insurance possibilities in the Northeast.** Jour. Forest. **21**: 30–32. 1923.

2478. Norquest, Clinton E. **Weather conditions as related to fire control.** Timberman 26^9: 132, 134. 1925.

2479. Oakleaf, H. B. **Lumber manufacture in the Douglas fir region.** *x + 182 p. 53 fig.* Commercial Journal Co.: Chicago, 1920.

2480. Osborn, Wm. B., Jr. **Primary factors governing action of forest fires.** Timberman 26^{10}: 190, 192. 1925.—This deals with meteorological factors, particularly relative humidity and wind, in relation to forest fires.—*Duncan Dunning.*

2481. Pearson, G. A. **Density of cell sap in forest trees.** [Rev. of: Korstian, C. F. **Density of cell sap in relation to environmental conditions in the Wasatch Mountains of Utah.** Jour. Agric. Res. **28**: 845–907. 1924]. Indian Forest. **51**: 477–481. 1925.

2482. Petrini, Sven. [Rev. of: Hedenström, J. H. **Skogen i kubik.** [**Cubic contents of forests.**) Privately printed: Norrtelje, 1924.] Skogen **12**: 270–271. 1925.—The volume tables are based on new types of form classes, which are evolved on a somewhat faulty basis.—*Henry I. Baldwin.*

2483. Pettis, C. R. **A proposed tax law for New York State.** (With comment by L. S. Murphy.) Jour. Forest. **21**: 25–29. 1923.

2484. Pogge, K. **Sandrohr—Segge!** [**Sandreed—sedge!**] Zeitschr. Forst- u. Jagdw. **56**: 242–243. 1924.—Sandreed (*Calamogrostis epigeios* L.) which has become a serious forest pest coincident with the use of the clear-cutting system, has been erroneously called sedge by foresters. As a true grass it has very little in common with the Cyperaceae. Hegi does not list the misnomer in his list of local German names for any of the Calamogrostis species. This pest will disappear more or less under the "continuous" forest.—*J. Roeser.*

2485. R[ecknagel], A. B. **Changes in curriculum of Swiss forest school.** [Rev. of: Weber. **Bericht des standigen Komitees über die Studienplanreform an der forstlichen abteilung der Eidg. Technischen Hochschule.** (**Report of the Committee on revision of the course of study in the forestry division of the Federal Polytechnical College.**) Schweiz. Zeitschr. Forstw. **73**: 262–271. 1922.] Jour. Forest. **21**: 75–76. 1923.—This committee of the Swiss Forestry Association recommends several months' practical experience before admission to the forestry course, an examination commission of both teachers and practicing foresters, more work on utilization and wood technology, and several weeks in a large saw mill during the $1\frac{1}{2}$ years of practice required after graduation.—*Philip C. Wakeley.*

2486. Record, S. J. **The persimmon's farthest north.** Amer. Forests and Forest Life **31**: 88. *1 fig.* 1925.—It is said that the most northern place where *Diospyros virginiana* is known to grow naturally is Lighthouse Point, in New Haven, Connecticut.—*Chas. H. Otis.*

2487. Rey. **Prés-bois—création de boqueteaux.** [Brush-lands—establishment of clumps of trees.] Bull. Trimest. Soc. Forest. Franche-Comté et des Provinces de l'Est **16**: 107–109. 1925.—The author concludes that in Savoie the division between forests and pasture should be based on the soil conditions and the grass and woods should be localized and considered independently. Local conditions such as the need of the mountaineers for forest products or of the stock for shelter may justify a mixture in the form of wooded pasture.—*J. Kittredge, Jr.*

2488. Richards, E. C. M. **White pine near New York City.** Jour. Forest. **21**: 90-91. 1923.—The author gives stock and stand figures for a tract of 19.4 acres of white pine near Monticello, Sullivan County, New York. The maximum stand on the best ¼ acre was 18,655 board feet of white pine, 20 board feet of hemlock, and 350 board feet of hard maple (by the International rule).—*Philip C. Wakeley.*

2489. Riebel. [Rev. of: Judeich, Friedrich. **Die Forsteinrichtung.** [Forest regulation.] 8th ed., revised by Max Neumeister. *607 p.* Paul Parey: Berlin, 1923.] Centralbl. Gesam. Forstw. **49**: 311–312. 1923.

2490. Romell, Lars-Gunnar. **Tillkottklängningens teori och praxis.** [The theory and practice of seed extraction.] Meddel. Statens Skogsförsöksanst. **22**: 125-144. 1925.—While many improvements have been made during the last 20 years in the technique of seed extraction, fundamental researches into the processes of cone-opening are still far from complete. Cones open because of a reduction in hygroscopic moisture and, due to their colloidal nature, evaporation from them is not the same as from a water surface; yet previous studies by the author show that the minimum drying times corresponding to different temperatures in the kiln may be determined with sufficient exactness by assuming the evaporation rate to be the same as from a water surface. In kilns of the progressive type, in which trays of cones move down against a current of warm air, for every initial temperature and humidity, as well as cone water content, there exists a border temperature below which no evaporation will take place. When the air leaving the kiln has this temperature (accomplished in practice by regulating the speed of the air current), the most efficient use has been made of the available heat. Exit-air may further be utilized to warm the air at the intake.—*Henry L. Baldwin.*

2491. S. **Der letzte Urwald Mitteleuropas von der Axt bedroht.** [The last virgin forest of central Europe threatened by the axe.] Deutsch. Forstzeitg. **40**: 950. 1925.—A 143.7 ha. tract of virgin forest at Kubany, Bohemia, near the Bavarian border, was set aside in 1858, to be kept forever in its original state. In 1870, ⅔ was destroyed by windfall and bark-beetles. Now the rest may have to be cut because of beetle attacks. The stand is from 754 to 1247 cu. m. per ha., an average of about 1000 cu. m.—*W. N. Sparhawk.*

2492. Schaeffer, A. **Un beau domaine forestier.** [A fine forest property.] Bull. Trimest. Soc. Forest. Franche-Comté et des Provinces de l'Est **16**: 103–106. 1925.—Two forests near Donon are described. In 1, consisting of beech and silver fir, fir dominates the north slopes and some stands contain 700 cu. m. to the ha. Fir is being successfully introduced by direct seeding and by planting under the beech, and after release cuttings to free the fir seedlings and saplings a mixed forest will result. The annual yield is 7.66 cu. m. to the ha.—*J. Kittredge, Jr.*

2493. Schaeffer], A. **Visite de balivages intensifs.** [An examination of some intensive markings.] Bull. Trimest. Soc. Forest. Franche-Comté et des Provinces de l'Est **16**: 115–118. 1925.—Details of the marking methods, the trees reserved, and the stumpage prices are given for 3 forests in the Haute-Saône. The forests of that region have been converted successfully from coppice to high forest.—*J. Kittredge, Jr.*

2494. Schmied. [Rev. of: Levakovic, Anton. **Die Bestandesmassenaufnahme mittels Probestämmen.** (Obtaining the volume of stands by means of sample stems.) *102 p.* Wilhelm Frick: Wien und Leipzig, 1922.] Centralbl. Gesam. Forstw. **49**: 76–80. 1923.—The book is a critical study of the various methods that have been proposed for selecting sample stems and utilizing them to get the volume of stands.—*W. N. Sparhawk.*

2495. Schneider. **Beiträge zur Geschichte und Wuchsform der nordwestdeutschen Kiefer.** [Notes on the history and growth-form of the northwest German pine.] Deutsch. Forstzeitg. **40**: 1004–1008. 1925.—The crooked, limby stands of *Pinus silvestris* that are so common in northwestern Germany grew from seed originating in southern France or southwestern

Germany. The poor form is believed to be due to inherited racial characteristics rather than to climate, for seed of east German origin sown in the northwest has produced straight trees, at least through the 2nd generation. As seed-bearing pine of south German origin is now scattered over most of the country, and as seed dealers generally get the cheapest seed, which is likely to be from those short, crooked trees from which the cones can be picked with the least effort, it is recommended that forest owners collect their own seed from well-formed trees.—*W. N. Sparhawk.*

2496. Schreiber, Max. **Beiträge zur Biologie und zum Waldbau der Lärche unter besonderer Berücksichtigung des physiologischen Prozesses der Transpiration. II Teil. [Contribution on the biology and silvics of larch, with special consideration of the physiological process of transpiration. Part 2.]** Centralbl. Gesam. Forstw. 49: 11–45. 1923.—In order to extend the range of larch cultivation, and also to get larger yields or wood of better quality in places where larch has done poorly, more information is needed on climatic races. Different larch races differ widely in rate of transpiration and in light requirements. This paper deals with some of the results of a study of the transpiration of 35-year-old trees of *Larix europaea* from the Tyrolese Alps and the Silesian foothills, planted near Vienna. The transpiration was compared by ascertaining the weight of water transpired during the 1st 3 hours by freshly cut twigs in water, and reducing it to terms of equal weights of air-dry and absolutely dry leaves of the 2 races. Throughout the season, the Silesian larch transpired less than the alpine.—It is pointed out that quantity and quality of wood produced is influenced by the leaf structure; shade leaves, having less chlorophyll for a given weight, assimilate less than light leaves. This fact has an important bearing on the technique of thinning to stimulate growth. The proportion of light leaves increases with altitude, hence trees growing at high altitudes require more H_2O and CO_2 than lowland trees of the same species. They generally get more moisture but less CO_2, hence silvicultural measures that tend to make CO_2 available (by hindering wind movement) are more effective at high than at low altitudes.—*W. N. Sparhawk.*

2497. Schreiber, M. [Rev. of: Löffler, Bruno. **Grundlagen, Aufgaben und Ziele einer forstlichen Pflanzenzüchtung. (Principles, problems and aims of forest plant breeding.)** *32 p.* Paul Parey: Berlin, 1923.] Centralbl. Gesam. Forstw. 49: 258–261. 1923.

2498. Schulenburg, v. d. **Holznägel statt Eisennägel im lebenden Baum. [Wooden instead of iron nails in living trees.]** Zeitschr. Forst- u. Jagdw. 56: 182–183. 1924.—In 1911 and 1913, 22 Berlepsch bird-houses were nailed to various conifers and hardwoods. Wooden nails were used. These were of dried acacia wood, conical in form, and half the thickness of a thumb at the upper end. After 10–12 years, their condition is very good. The nails have held best in pine, spruce and oak. The author suggests the use of wooden rather than iron nails for putting up signs of various sorts on trees. The use of wooden nails is almost necessary in localities where sawmills are operating.—*J. Roeser.*

2499. Schwappach. **Die englische Forestry Act von 1919. [The English Forestry Act of 1919.]** Zeitschr. Forst- u. Jagdw. 56: 102–104. 1924.—The English Forestry Act of August 19, 1919, created a forestry commission of 8 members to develop the practice of forestry, which had been badly neglected as a state activity before the war. The duties of the commission are outlined. During 1920 and 1921, £133,365 were spent in land acquisition and £109,684 in silvicultural activities. Land purchases amounted to 42,330 acres, 61,106 acres were leased, and 4229 acres were planted.—*J. Roeser.*

2500. Schwappach. **Veränderungen im forstlichen Unterrichtswesen des Auslandes. [Changes in forest education in foreign countries.]** Zeitschr. Forst- u. Jagdw. 56: 55–60. 1924.—The status of forest instruction in Austria, Hungary, Czecho-Slovakia, Poland, Jugoslavia and Rumania is briefly described. Outside of Europe remarkable progress has been made chiefly in Japan, the U. S. A., and Canada. A list of schools in which forestry is taught in those countries is given, with brief explanations.—*J. Roeser.*

2501. Schwappach. **Vorschriften über den Waldsamenverkehr in Österreich. [Regulations governing the trade in forest tree seed in Austria.]** Deutsch. Forstzeitg. 40: 870–871. 1925.—Beginning December 1, 1925, tree seed sold in Austria must be in sealed packages, and the labels must show species, weight, year of collection, germination percentage, cleanness, and place of origin (locality, height above sea-level, and for some species the kind of soil or whether from a dry or moist site).—*W. N. Sparhawk.*

2502. Schwappach. **Zur Geschichte der Kiefernwirtschaft in Preussen.** [The history of pine culture in Prussia.] Zeitschr. Forst- u. Jagdw. 56: 82–93. 1924.—The history of pine growing in Prussia from 1760 to 1860 shows that the natural reproduction of pine is beset with great obstacles. The efforts of von Kropff, Burgdorf, Hartig and Pfeil in growing pine in Brandenburg under various silvicultural systems are briefly reviewed. Pine was 1st planted about 1790, and since 1834 clear-cutting with sowing or planting has gradually become the accepted standard in northern Germany.—*J. Roeser.*

2503. Seelen, von. **Laubverwehung und Holzartenmischung.** [The dispersion of leaves by wind and the mixture of tree species.] Zeitschr. Forst- u. Jagdw. 56: 36–38. 1924. —By careful choice of species it is possible to hinder or prevent the blowing away of leaves and the subsequent impoverishment of the soil. Ash, sycamore, and larch rank highest as protective species, and may be mixed with beech and oak, whose leaf litter is most susceptible to dispersion. The selection forest represents the most desirable silvicultural form to secure protection against this form of damage.—*J. Roeser.*

2504. Seelen, von. **Standortsgemässe Betriebsformen.** [Silvicultural systems conformable with site.] Zeitschr. Forst- u. Jagdw. 56: 78–80. 1924.—For a given site, that silvicultural method should be adopted which offers the greatest economic and technical advantages without neglecting the natural demands of the forest.—*J. Roeser.*

2505. Simpson, A. Gael. **Static as an indicator of fire weather.** Timberman 26[9]: 138, 140. 1925.

2506. Singer, Josef. **Beitrag zur Waldgeschichte Böhmens; Erzgebirge.** [Contribution to the forest history of Bohemia; Erzgebirge.] Centralbl. Gesam. Forstw. 49: 296–308. *Fig. 19–21.* 1923.—The author refers to Rudolph and Firbas' pollen diagrams of the profiles of peat bogs, which, on the basis of relative abundance of different kinds of pollen in the various layers, indicate the composition of the surrounding forests at different periods. In the Erzgebirge they show a succession of pine, spruce, beech, fir, and finally spruce again. The question whether the conquest of the beech-fir sites by spruce is the result of gradual climatic change and consequent site deterioration, or of human activity, is solved by a comparison of type maps prepared about 1700, with the present cover. The present predominance of spruce is the result of cultural measures. It has brought about such a deterioration of the soil that natural reproduction of spruce or reproduction by sowing is difficult. The tendency now is to reintroduce fir and beech, although the task may be difficult.—*W. N. Sparhawk.*

2507. Singh, Jagat. **Germination of teak seed.** Indian Forest. 51: 420–421. 1925.

2508. Smithies, E. A. **The French 1883 method. A generalized modification.** Indian Forest. 51: 460–464. 1925.—A modification of the old French system is suggested for calculating the yield from a selection forest.—*E. N. Munns.*

2509. Snyder, F. D. **Some trees worth knowing.** Amer. Forests and Forest Life 30: 605–606. *3 fig.* 1924.—This deals with the banyan tree, its habits and characteristics.—*Chas. H. Otis.*

2510. [Spain] Direccion General de Agricultura, Minas, y Montes. **Estadistica general de la produccion de los montes publicos y apendices a la misma correspondientes al año forestal de 1922–1923.** [Statistics of production for the public forests for the year 1922–1923.] *32 + xviii p.* Imprenta Cervantina: Madrid, 1925.—The public forests cover 6,586,693 ha., including 2,400,568 ha. of high forest (pine 63%, oak 20%, beech 10%, other 7%), 1,577,198 ha. of coppice, and 2,608,927 ha. of brush and grazing land. More than 96% belongs to local communities, and less than 4% to the State. The total cut in 1923 was 400,203 cu.m. of timber and 2,365,050 steres of firewood. Including stock grazed in trespass, 7,040,736 head of all kinds, chiefly sheep, grazed on the public forests. Other important products were esparto, resin, and cork. Nurseries in 21 districts produced 1,500,000 broad-leaved, and 4,100,000 conifer trees, and 7,434 ha. were planted.—*W. N. Sparhawk.*

2511. S(parhawk), W. N. [Rev. of: Woodward, Karl W. **The valuation of American timberlands.** *vii + 246 p. 14 fig.* John Wiley & Sons: New York, 1921.] Jour. Forest. 21: 67–71. 1923.—The book is devoted largely to general descriptions of the 17 "types" of forest in the U. S. A. and those of Alaska, Porto Rico, and the Philippines, presenting concisely for each type its distribution, character of stand, rates of growth, factors influencing costs of esti-

mating, logging and milling methods and costs, lumber prices, stumpage and land values, and factors affecting the validity of titles. The reviewer calls attention to many inaccuracies and errors and some absurdities in figures and statements, and holds that the author, in forecasting future costs of growing timber, assumes too slow a growth rate for many species, too high a cost of land, regeneration, and protection, and application of compound interest over too long a period.—*Philip C. Wakeley.*

2512. Stockenström, Bo. von. **De actuella jordfrågorna och skogsbruket.** [**Timely land questions and forestry.**] Skogen **12**: 249–269. 1925.—Although ¾ of the cultivated land of Sweden is owned by farmers in small lots, legislative problems concerning the leasing of farms by large companies and estates are constantly before the Parliament. Laws regulating the period of contract and other conditions should always favor the formation of small farms in the forest. Intensive forestry requires 2–3, and extensive forestry ½ days' work per hectare per year.—*Henry I. Baldwin.*

2513. Strobl, Franz. **Weichselgärten. Die Kultur der türkischen Weichsel, Prunus Mahaleb, im Burgenlande.** [**The cultivation of Prunus Mahaleb in western Hungary.**] Centralbl. Gesam. Forstw. **49**: 262–266. 1923.—In the Mattersdorf district the growing of this cherry for pipestems, cigarette holders, and walking sticks is an important branch of agriculture. The sprouts are cut at an age of 3 years, when they yield sticks approximately 14 mm. in diameter and 1–1.5 m. long.—*W. N. Sparhawk.*

2514. Tischendorf, Wilhelm. **Die Genauigkeit von Messungsmethoden und Messungsergebnissen bei Holzmassenermittlungen.** [**The accuracy of measurements of timber volume.**] Forstwiss. Centralbl. **47**: 317–333, 415–436, 506–515, 614–625. *Fig. 1–8.* 1925.—This paper treats of the sources of error in measuring trees and stands, and the evaluation of the errors by statistical methods. Four classes of errors are discussed: (1) In measuring diameters; (2) in computing volumes of logs; (3) in computing volumes of standing trees, including measurement of heights and top diameters and the use of Pressler's or the form factor method; and (4) in getting the volumes of stands, usually by measurement of sample trees. It is shown that a mean error of ± 1 cm. in diameters and ± 1 m. in heights will result in an error of ± 10% in tree volumes by Pressler's formula and ± 13% by the form factor method. There is no use in computing form factors to more than 2 decimal places. In selecting sample trees, one should consider not only the total number of trees in each diameter class, but also their relative volumes. It is not mathematically correct to select the average tree for a group on the basis of the arithmetic average basal area; the correct sample is the tree of average volume, and volume is a product of 3 variables; basal area, height, and form factor. The diameter of the tree of average volume is generally 2–5 mm. greater than that of the tree of average basal area.—*W. N. Sparhawk.*

2515. Van Valkenburg, S. **Java: The economic geography of a tropical island.** Geog. Rev. **15**: 563–583. 1925.—This contains a short discussion of the forests.—*S. B. Show.*

2516. Vorreith. **Die waldbauliche Bedeutung der rot- und grünzapfigen Hochgebirgslärche.** [**The silvicultural significance of the red and green coned larch.**] Wiener Allg. Forst- u. Jagdzeitg. **43**: 206–207. 1925.—Two forms of larch exist, one having reddish brown cones in the fall, the other green. The green-coned form is characteristic of the lower altitudes, the brown-coned of higher. The green-coned form is of more rapid growth and better form, the greatest differences appearing at the lower elevations. The brown-coned variety is more windfirm.—*F. S. Baker.*

2517. Weinkauff. **Wirtschaftsgrundsätze der Rheinwaldungen des Forstamtes Speyer.** [**Principles of management of the forests along the Rhine in the Speyer district.**] Forstwiss. Centralbl. **47**: 644–654. 1925.—These forests, situated on alluvial soils 1–4 m. above the mean level of the Rhine, consist of a mixture of broad-leaved trees. The main types are (1) pedunculate oak, associated with elm, hornbeam, English and black walnuts; (2) ash, with linden; (3) maple, with locust, beech, aspen, birch, and occasionally sessile oak; and (4) willows and alder. The underwood is handled as coppice, with a maximum rotation of 10 years; the overwood is managed as selection forest, with rotation varying from 60 to 120 years, and averaging 80 years. Growth is rapid, averaging 4½–6 cu.m. per ha. per annum, and diameters of 60–70 cm. are attained in 60–120 years, depending on the species. For the overwood, natural repro-

duction cannot be relied upon, because of the rank undergrowth and the abundance of wild game.—*W. N. Sparhawk.*

2518. Wendroth. **Zur Dauerwaldfrage.** [**The continuous forest question.**] Zeitschr. Forst.- u. Jagdw. **56:** 80–82. 1924.—Commenting on Eberbach's objections to the continuous forest idea, the author points out that there is necessarily a difference between the ideal condition and actual practice, which has to be adapted to local conditions.—*J. Roeser.*

2519. Wimmer. [Rev. of: (Philipp.) **Richtlinien für Erziehung und Verjüngung der Hochwaldungen in Baden.** (**Instructions for handling and reproducing the forests of Baden.**) Forstabteilung des badischen Finanzministeriums: Karlsruhe, 1925.] Forstwiss. Centralbl. **47:** 729–742. 1925.—These official instructions of the State Forester of Baden are criticised for the reason that they prescribe a single silvicultural system, which has been tried out in only a few localities, for all the widely diverse forests of the country. Many of the author's statements are objected to, and some of his figures on yield from thinnings are asserted to be impossible. The instructions are based on the objective of maximum percentage of profit, rather than on the objective of maximum production and perpetuity of the forest capital, which should govern public forestry.—*W. N. Sparhawk.*

2520. Wodera, H. **Ein neuer Baumstärkenmesser in Verbindung mit einem Höhenmesser, kombiniert nach Faustmann-Weise.** [**A new dendrometer.**] Centralbl. Gesam. Forstw. **49:** 45–52. *3 fig.* 1923.—This paper describes the construction and use of the Wodera-Fromme dendrometer, a newly devised instrument for measuring heights and diameters at any point on the stem of standing trees.—*W. N. Sparhawk.*

2521. Wolff. **Entomologische Mitteilungen. Über Blattwespenfrass auf Sorbus aucuparia.** [**Entomological contributions. Sawfly damage on Sorbus aucuparia.**] Zeitschr. Forst-u. Jagdw. **56:** 38–46. 1924.—An attack of *Pristiphora geniculata* Htg. on *Sorbus aucuparia* in the forest of Freienwald is described. The *Pristiphora* species of middle Europe with their host plants and parasites are reviewed in tabular form, and an identification table for sawfly larvae feeding on *Sorbus* is included.—*J. Roeser.*

2522. W(oolsey), T. S., Jr. [Rev. of: Fankhauser, F. **Guide pratique de sylviculture.** *3rd French ed. trans. from 6th (?) German ed. by* Petitmermet. *348 p., 1 pl. 124 fig.* Payot & Cie.; Lausanne et Genéve, 1921.] Jour. Forest. **21:** 67. 1923.—The sections on the importance and utility of forests and on natural and artificial regeneration should be of special interest to American foresters, who are too frequently groping for information on problems already satisfactorily solved in Europe. [See also this issue, Entry 2436.]—*Philip C. Wakeley.*

2523. Wright, H. L. **Progress report on forest administration in the Jammu and Kashmir State for the year 1923–24.** *iv + 38 + xliii p.* Lahore, 1925.—Working plans are available on only 3475 sq. miles of the total of 9499 sq. miles of forest. Reproduction of deodar and blue pine is generally good while that of silver fir and chil pine is less satisfactory. Deodar is subject to attack by *Trametes pini.* Fire protection was successful. Most cutting was by the selection method.—*S. B. Show.*

2524. Zaayer, C. V. **Timber thinning methods and results.** Timberman **26**[8]: 50–52. *10 fig.* 1925.—Several European methods are described, as is the Swedish system of tree classification, with figures illustrating the results of different degrees of thinning in Swedish experiments.—*Duncan Dunning.*

2525. Zschokke, T. C. **Where pagans practice forestry.** Amer. Forests and Forest Life **31:** 3–6, 60. *5 fig.* 1925.—In the high mountains of northern Luzon 3 tribes have developed what is probably the oldest example of forestry in the world, due in part to the curious "tribal" laws governing land tenure and water rights. During the period of readjustment under American rule the forests may suffer.—*Chas. H. Otis.*

GENETICS

Orland E. White, *Editor*

(See also in this issue Entries 2182, 2183, 2325, 2354, 2355, 2400, 2418, 2497, 2592, 2600, 2601, 2602, 2603, 2604, 2635, 2640, 2790, 2800, 2801, 3025, 3029, 3038)

2526. Anonymous. **Heredity.** Child Study 2: 3–4, 8. 1925.—Three letters written by by members of the Child Study Association in connection with work in mental hygiene. A contribution to the lay understanding of heredity in relation to parental responsibility.—*Orland E. White.*

2527. Anonymous. **Inheritance and insanity.** Nature 116: 660–661. 1925.—This refers to the Harveian oration before the Royal College of Physicians of London by Sir Frederick Mott.—*O. A. Stevens.*

2528. Anonymous. **Winter egg records, 1924–25.** Jour. Dept. Lands and Agric. [Ireland] 25: 67–72. 1925.—According to the author, the strain is as important as the breed.—*Donald Folsom.*

2529. B., W. L. **Cotton-breeding, plant physiology and agriculture.** Nature 116: 345–346. 1925.—This is a leading editorial based upon the report from the Bombay Presidency of the 2nd annual conference of plant breeders at Surat in 1925. Genetical knowledge of cotton is fragmentary. The writer has found pure lines to be modified materially by environment. The possibility of using hybrid seed is suggested.—*O. A. Stevens.*

2530. Belling, J. **On the origin of species in flowering plants.** Nature 116: 279. 1925.—The author here regards the origin of species as the origin of the difference between 2 species. This difference is partly expressed in flowering plants in the abortion of pollen and ovules in the hybrids. The abortion he ascribes to 2 causes (1) the different distribution of genes between 2 or more chromosome pairs so that vital genes are omitted after the reduction division in some or all of the groups of chromosomes of the F_1 of the cross; (2) the attraction between chromosomes which should be homologous fails in the reduction division of the F_1 plant so that non-conjunction takes place with regard to 1 or more pairs. The origin of species is then effected by segmental interchanges between non-homologous chromosomes and by the loss of attraction between chromosomes which were homologous, producing non-conjunction. The differences between the species in a genus may be Mendelian, or due to varying number and size of chromosomes as well as to the causes given above. The hypothesis of the origin of species from crosses posits the existence of allied species. Examples of interchange between non-homologous chromosomes and of non-conjunction are given.—*Mary Ellen Peck.*

2531. Buchanan, J. Arthur. **A consideration of the various laws of heredity and their application to conditions in man.** Amer. Jour. Med. Sci. 165: 675–708. *Fig. 1–41.* 1923.—The article consists of an introduction and an account of 6 studies in human heredity. The introduction contains a general review of elementary genetics, including the statement that when 3 or 4 characters are being studied it is necessary to know 4 grandparents, 2 parents and 4 or more children. The 1st study treats of blood groups with 17 pedigrees given, including 3 generations. "Blood is transmitted by the germ plasm according to the 1st and 2nd law of Mendel. The hybrid stage is absent." The heterozygous property is illustrated by 3 pedigrees. The 2nd study treats of migrain. Eight pedigrees are given from the 127 families studied. Migrain may exist in homozygous and heterozygous state. It is the expression of a hereditary character with a determiner specific for itself. The 3rd study traces essential epilepsy through 7 pedigrees. Migrain was present in 53–66% of cases. Both conditions are transmitted by the same underlying factor in the germ plasm. Being thus hereditary no treatments are of any avail for these conditions. Study (4) traces diabetes mellitus. Five pedigrees are given showing high mortality of young children from diabetic parents. "The lack of conformity to the laws of dominance and recessiveness in man because of the absence of the hybrid stage may explain certain discrepancies in the familial occurrence of diabetes, but neither the homozygous nor the heterozygous principles in heredity have been fulfilled by diabetes mellitus." The data point to "the quantitative action of some causal factor rather than expression of the segregative properties of the germ plasm." Study (5) concerns essential

asthma. A table is given showing the number of progeny afflicted in 17 families in which 1 parent was asthmatic and in 39 families in which both parents were asthmatic. It is concluded that asthma is not the expression of a specific hereditary biological character of man. Study (6) is a similar piece of work on protein sensitivity, a condition which is also not hereditary.—"No evidence has been presented in the study of heredity to show that characters are susceptible of appearing or that there is a tendency for them to appear. They are either present or absent."—*E. C. MacDowell.*

2532. Chiriţescu-Arva, M. **Un cas de monstruosité de l'épi du seigle. [A monstrosity of the spike of rye.]** Bul. Soc. Stiinţe Cluj 2^2: 78-80. *1 fig.* 1924.—The author observed a double spike of rye in a field near Chisinau (Bessarabia). This double spike produced 48 seed, but all plants grown from these seed have borne single spikes.—*Al. Borza (transl. by A. J. Eames).*

2533. Darrow, Geo. **Importance of sex in the strawberry.** Jour. Heredity **16**: 192-204. *8 illus.* 1925.—Pistillate strawberries represent a fairly definite group, but the hermaphrodite varieties show great variation. In some both pistils and stamens are functional, but in many the pistils are sterile to a greater or less degree. A comparison of the present varieties with those listed by Longworth in 1846 shows that the hermaphrodite varieties have greatly increased in importance. Longworth's results are compared with what is found in the more important varieties in use today. Valleau's work (see Bot. Absts. 1, Entry 51) is also discussed. Observation on flower sterility in Maryland shows that great variations occur even in the same variety. The fact is noted that in a number of hermaphrodite varieties pistillate flowers are produced under certain conditions, possibly due to the length of the day. A more complete understanding of these problems is essential, and their solution is both genetic and physiological.—*Robert Cook.*

2534. De Aberle, S. P. **Hereditary anemia in mice and its relation to dominant spotting.** Amer. Nat. 59: 327-334, 1925.—In litters from pairs of black eyed white mice, 75 out of 425 young at birth were anemic, showing only 20–25% of normal erythroplastids, only slight growth and early death, 8 days being the maximum. Anemia was definitely identified in foetuses at 16 days. In litters from black eyed whites by non-black eyed whites no anemics were found among 185 young; prenatal observations from such matings showed no anemics among 79 living foetuses. Dead foetuses in the 2 types of mating were respectively 21.8% and 22.5%, indicating no selective elimination of anemics before birth. Mice homozygous for dominant spotting are not found because they die at or soon after birth.—*E. C. MacDowell.*

2535. Diver, Cyril, H. E. Boycott, and Sylvia Garstang. **The inheritance of inverse symmetry in Limnea peregra.** Jour. Genetics **15**: 113-200. *Pl. 5, fig. 1-6.* 1925.—Most snails of this species are dextral. Sinistrals sometimes occur. Individuals are hermaphroditic and reproduce either by crossing or by self-fertilization. Dextral cannot mate with sinistral. Over 600 broods including 53,000 young were studied. The authors assume from their results that a factor or factors within the chromosomes determine the direction of symmetry and that these undergo typical segregation and recombination. The genetic constitution of an individual does not become apparent until it reproduces, since its appearance is dependent upon the genetic constitution of its parent or parents rather than upon its own. The heterozygotes are of 2 kinds in a 1:1 ratio, namely, those that organize their gametes dextrally and those that organize them sinistrally. Genetically they are alike as are their gametes. Broods are of 6 types; *A*, all dextral; *B*, 3 dextral to 1 sinistral; *C*, 1 dextral to 1 sinistral; *D*, all sinistral; *E*, mostly sinistral with a few odd dextrals; *F*, mostly dextral with a few odd sinistrals. Any 1 of 6 types may be obtained from either dextral or sinistral pairs; *A*, *D*, *E* and *F* broods from either dextral or sinistral singles. Type *C* broods (uncommon) are reproduced by 1 parent giving only dextral young and the other only sinistral. They do not represent a Mendelian ratio. There is some evidence in type *B* broods (also uncommon) indicating that each parent produces a 3:1 ratio. This is the only suggestion of dominance in the results. First cousin groups of broods are classified as α, all broods dextral; β, 3 broods dextral to 1 sinistral; γ, 1 brood sinistral to 1 dextral; δ, 1 brood dextral to 3 sinistral; ϵ, all broods sinistral. Types α, γ, and ϵ occur where they might reasonably be expected. The presence of β and δ groups has not yet been clearly demonstrated. Under certain conditions

there is a definite shortage or entire absence of expected *A* or *D* broods replaced by *E* or *F* broods. The authors postulate the suppression or modification of the normal system of inheritance underlying the general hypothesis. Fewer young, larger percentage of addled eggs and of abnormalities occur in *E* and *F* broods than in *A* and *D*. Odd dextrals thus occurring show greatly reduced fecundity. *E* and *F* broods decrease in size in inverse proportion to number of odd dextrals or odd sinistrals present.—*Anna R. Whiting.*

2536. Federley, Harry. **Gibt es eine konstant-intermediäre Vererbung? [Is there a true-breeding blending type of heredity?]** Zeitschr. Indukt. Abstamm.- u. Vererb. **37**: 361–385. 1925.—Meisenheimer on the basis of experiments with moths has postulated modification of genes resulting in true-breeding hybrids intermediate in character between parents, whether the latter are races, species or hybrids. The author points out that wild species are very heterozygous, that geneticists do not expect them to segregate as Meisenheimer seems to imply, but that many independently segregating factors are involved resulting in more or less intermediate type with relatively little evidence of segregation in later generations. Thus Harrison's melanic mutant acts as a unit in relation to ancestral species, but with other species intergrades occur. The gene has in this case not been modified but the residual heredity is different. There are in Lepidoptera, according to nearness of relationship of forms crossed, all degrees of fertility and sterility, of segregating and blending heredity, of chromosome conjugation and failure to conjugate in gametogenesis. In one and the same cross some chromosomes synapse and segregate like homologues, others divide homotypically. The latter results in a special type of true-breeding hybrid. Meisenheimer's citation of earlier papers of Castle and of Phillips advocating blending heredity are met by quotations from later papers of the same authors admitting multiple factors. Meisenheimer has confused cross-over with blending, but the group working on *Drosophila* have clearly demonstrated the difference. —*P. W. Whiting.*

2537. Flint, L. H. **Electrogenetics.** [Rev. of: Pirovano, A. **La mutazione electrica delle specie botaniche e la disciplina dell'eredità nell'ibridazione.** *vii + 268 p. 114 illus.* U. Hoepli: Milan, 1922.] Jour. Heredity **16**: 215–216. 1925.—It is pointed out that Pirovano's results are uncritical because of the small number of experiments and the inadequacy of his controls.—*R. C. Cook.*

2538. Hume, A. N., E. W. Hardies, and C. Franzke. **Correlations between length of spike and culm in wheat and characters of progeny, including yield.** South Dakota Agric. Exp. Sta. Bull. 214. *1–15. 1 fig.* 1925.—Nine mother plants of Marquis wheat and their progeny were correlated in various ways. Length of head and yield showed no correlation. Length of head and length of culms gave: $r = 0.4822 \pm 0.0323$, but progeny culms of 1922 showed a negative correlation, namely, $r = -0.0061 \pm 0.0421$ with the mother heads of 1919. The highest yielding mother head of any of the 4 years led only 1 year.—*E. J. Petry.*

2539. Jenkins, Merle T. **Heritable characters of maize XXII—Purple plumules.** Jour. Heredity **16**: 307–310. *2 illus.* 1925.—A new character in maize called purple plumules, *Pu Pu*, is described. Inheritance studies showed it to behave as a simple Mendelian dominant. —*Author.*

2540. Jones, D. F. **Heritable characters of maize XXIII—Silkless.** Jour. Heredity **16**: 339–341. *2 illus.* 1925.—A sterility factor, designated *sk*, has been found in Gold Nugget Flint corn that renders the ears barren of silks. No seed are produced, apparently due to abnormal development of the ovules. Pollen production is not noticeably affected. This factor is linked with the *B* plant color factor with crossing over of approximately 10.5%. It is independent in inheritance with 1 representative of 4 other groups.—*Author.*

2541. Jones, E. E. **The occurrence of an eye and of a tooth abnormality in a line of albino rats.** Amer. Nat. **59**: 427–440. 1925.—The following experiments with 4 lines of rats are described and the results given. Line I came from a pair of rats with abnormal eyes that were *in utero* at the time the left ovary and tube of the mother was exposed and fanned for 5 minutes. When inbred for 6 generations, 2% offspring had abnormal eyes. Line II from the same abnormal ♀ as line I by normal sib from later litter, when inbred for 7 generations gave 5% abnormals. Line III from 2nd litter after operation of original mother inbred for 4 generations gave 0.8% abnormals. Line IV from 3rd litter after operation of original mother inbred for

7 generations gave 14% abnormals. Ten cases of abnormally elongated teeth appeared mainly in 1 family of line I. Controls (number not given) from original parents before operation on mother, gave no abnormals.—*E. C. MacDowell.*

2542. Kihara, Hitoshi. **Weitere Untersuchungen über die pentaploiden Triticum-Bastarde.** [**Further research on the pentaploid wheat hybrids.**] Japanese Jour. Bot. **2**: 299–304. *Pl. 14.* 1925.—In a previous article the author showed that in reciprocal crosses of 41 and 42 chromosome segregates from crosses of *Triticum durum* × *T. vulgare* that the 21-chromosome pollen grains functioned better than the 20-chromosome pollen grains. The F_1 pollen of crosses between *T. Spelta* × *T. polonicum* when used on *T. Spelta* as the mother plant showed that F_1 pollen grains with 20 and 21 chromosomes functioned most frequently although some pollen grains with a lower chromosome number were also effective. When the F_1 pollen was used on the 14-chromosome parent only the 14-chromosome pollen grains of the F_1 functioned. Crossing experiments between 2 of the 40-chromosome segregates of *T. Spelta* × *T. polonicum* suggests that 1 segregate has the chromosome combination (2 × 14 + aa + bb + cc + dd + ee + gg), while the other segregate has the combination (2 × 14 + aa + bb + cc + dd + ee + ff). (See Bot. Absts. 14, Entry 2588.)—*Karl Sax.*

2543. Klodnitzky, I., und G. Spett. **Kurzschwänzige und schwanzlose Varianten bei Hunden.** [**Short tailed and tailless variants in dogs.**] Zeitschr. Indukt. Abstamm.- u. Vererb. **38**: 72–74. 1925.—From different parents of various breeds 7 litters (43 dogs) are reported in which short-tailed or tailless individuals were found. The author concludes that taillessness is a dominant character depending on 2 or more multiple factors; that short tail is a heterozygous condition; that there is no special association of the character with 1 sex or race and that the viability is reduced.—*E. C. MacDowell.*

2544. Kniep, H. **Ueber Geschlechtsbestimmung und Reduktionsteilung.** [**Sex-determination and the reduction division.**] Verhandl. Physikal.- Medizin. Ges. Würzburg **47**[1]: 1922.—In contrast to the bisexual condition which has been demonstrated for *Phycomyces*, *Schizophyllum commune* and *Aleurdiscus polygonius* (Basidiomycetes) have what the author calls multipolar sexuality. For instance, in *Aleurdiscus*, in which all 4 spores from a basidiophore are shed at once under favorable temperature conditions and can thus be studied as a group, of the 4 spores from one basidiophore the mycelia of 2 will unite with those of the other 2, but not inter-se. It is assumed that like and unlike unite. Mycelia from 2 spores of every 4-group react alike in crosses with mycelia from other groups, but different crosses of 4-groups may react in 3 different ways: (1) No union between 4-groups; (2) union between all 4 groups; (3) each mycelium will unite with 2 of those from another 4-group but not with the other 2. in the 3rd case, both 4-groups are assumed to be identical. To explain the 1st case the author assumes a dihybrid condition without linkage in which only heterozygotes for both factors can mate. Reduction is supposed to occur at the 1st division, since 2 basidiospores are always alike in their reactions. The 2nd case can only occur when the spores are derived from fruiting bodies of different origin, and it is suggested that mutation may have occurred in the genes of one, so that it has become *A'B'a'b'* instead of *ABab*. The sexual condition in *Schizophyllum commune* is shown by similar experiments to be still more complex, but no factorial hypothesis is offered in explanation.—*Margaret Mann Lesley.*

2545. Kojima, H. **On the meiosis and the chromosome numbers in different races of Solanum Melongena L.** (Japanese, with English resumé on p. 100.) Bot. Mag. Tôkyô **39**: (119)–(123). 1925.—Study of the meiotic mitoses of the pollen mother cells in 21 visibly different races of *Solanum Melongena* revealed the diploid number of chromosomes to be 24 and in 6 of these the haploid number is 12. In other genera of the Solanaceae the chromosome numbers are 12, 18, 24, 36, and 72, evidence which indicates that all the chromosome numbers of the Solanaceae are multiples of 6. The behavior of the spireme in the reduction division of *S. Melongena* suggests a case of telosyndesis.—*Mary Ellen Peck.*

2546. Kottur, G. L. **Improvement of cotton by breeding wilt resistant strains.** Bull. Dept. Agric. Bombay Presidency **119**: 15–18. 1925.—The article reports a considerable difference in susceptibility to Fusarium wilt among different varieties of cotton grown in the Southern Maratha region of India. Pronounced differences were found also among 3 strains derived from one of the most resistant varieties (Kumpta), one of these being so little susceptible as

to recommend it for wilt-infected areas. Crosses with a still more resistant but otherwise inferior variety have been made, which may prove valuable.—*T. H. Kearney.*

2547. Kraatz, J. J. **Hereditary deaf-mutism. A study of the Mendelian factors in the inheritance of deaf-mutism.** Jour. Heredity 16: 273–278. *3 charts.* 1925.—This study deals with true deaf-mutism, which is always hereditary, and existent in the individual from birth. It is a distinct type from that caused by otosclerosis or from various acquired types. True deaf-mutism is explained here on the Mendelian basis. Data for deaf by deaf and deaf by normal marriages were taken from Fay's "Marriages of the Deaf in America," and data on normal by normal producing deaf, from records of the Ohio State School for the Deaf. Deaf-mutism cannot be explained on the basis of a single dominant, or single recessive, or sex-linked factor. On a 2-factor hypothesis the data explain all cases, with a very few exceptions, which are explicable by recessive factors. Normal by normal crosses and deaf by normal, should on this theory give no families of all deaf offspring, and deaf by deaf crosses should give some families of all normal offspring. The data agree with these requisites of the 2-recessive factor hypothesis.—*Author.*

2548. Kronacher, C. **Neuzeitliche Vererbungslehre und Tierzucht. [Recent genetics and animal breeding.]** Naturwissenschaft u. Landwirtschaft. 2: 6–30. 1925.—The article is a discussion of the bearing of genetic principles on practical livestock breeding, under 3 heads: The pure line concept, the mutation theory and Mendelian heredity. The writer emphasizes especially the importance, indicated by these discoveries, of determining the genetic constitution of individuals by test matings.—*Sewall Wright.*

2549. Landauer, Walter. **Bemerkungen über Variation, Symmetrie und Korrelation bei Echinoideenpluteis. [Observations on variation, symmetry and correlation in echinoid plutei.]** Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 62–71. *Fig. 1–7.* 1925.—It is shown in this article that although the number of skeletal rods in the anal arms of the normal hybrid plutei of *Sphaerechinus granularis* ♀ × *Paracentrotus* (*Strongylocentrotus*) *lividus* ♂ may vary from that of either parent, this variation is markedly increased by the use of ammonia. Of 1,000 anal arms of hybrids treated with ammonia, 3 possessed only 1 anal rod; 149, 2; 817, 3; 25, 4; and 6, 5; while in 1,000 of the normal hybrids 59 possessed 1; 880, 2; 60, 3 and 1, 4. The normal number of anal rods in the parent species is 1 in the paternal and 3 in the maternal plutei. One thousand anal arms of the former had only a single rod, and of the latter, 2 possessed 2 and 988, 3 rods. In the normal hybrid plutei 88% of the anal arms have 2 rods and are therefore intermediate with respect to the parental number. However, in the ammonia hybrids, 81.7% have 3 rods and 3.1% more than 3. These results indicate that the normal hybrids owe their intermediate rod number to their having equal quantities of maternal and paternal chromatin, while the ammonia hybrids are matroclinous, due not to the doubling of the maternal chromatin, but to a general recombination of genes, or to a change in the effect of Paracentrotus chromosomes in Sphaerechinus plasma. There is a correlation between the number of rods in the right and in the left anal arms of individual plutei in the ammonia hybrids and in the maternal type, but in normal hybrids the number of right and left rods may vary independently in a single individual.—*Ed. Crabb.*

2550. Lloyd, B. **Inheritance of hemophilia.** Jour. Heredity 16: 28–30. *1 illus.* 1925. —The inheritance of hemophilia is traced in 2 families. In one the inheritance is sex-linked as previously reported by a number of investigators. In the other, the mode of inheritance is not so clear. Apparently in this family the normal allelomorph of the hemophilia is only incompletely dominant, so that there are some evidences of bleeding in the case of heterozygous females.—*R. C. Cook.*

2551. Lush, Jay L. **The possibility of sex control by artificial insemination with centrifuged spermatozoa.** Jour. Agric. Res. 30: 893–913. *14 fig.* 1925.—Centrifugal separation of male-producing and female-producing sperm of rabbits and swine was attempted. A partial separation of larger and smaller sperm was effected in case of swine; this result in rabbits was uncertain, though the microscopic studies indicate that a small size difference of 2 kinds of sperm probably exists. The rabbit cells from top to bottom of centrifuge tubes were used in artificial inseminations, but no observable changes in the sex ratio resulted. The swine sperm were not used in breeding tests. Sex control by use of centrifugal separation

involves the choice of distinctly dimorphic sperm, together with a simplification and extension of technique.—*Oscar Riddle.*

2552. Lush, Robert H. **Inheritance of twin calves in a herd of Holstein cattle.** Jour. Heredity 16: 273–279. *5 illus.* 1925.—This paper reports 16 pairs of twin calves in 197 births of Holstein cattle at the Kansas Station, or about 9 times the average number of twins for dairy cattle. By use of a relationship chart it is shown that the sire is more important in the production of twins than the dam. One sire is credited with a twinning percentage of 19.15%. The age of sire and of dams, season of year, and producing ability of dams appear to be negligible factors in the production of twins.—*Author.*

2553. MacDowell, E. Carleton, and Elizabeth M. Lord. **The sex ratio in litters of mice classified by the total amount of prenatal mortality.** Proc. Soc. Exp. Biol. and Med. 22: 389–390. 1925.—Data showing percentage of prenatal mortality for 445 litters have been obtained by subtracting the number of young born from the number of ova, as indicated by the number of corpora lutea, counted surgically. Sex ratios show no tendency to decline as the prenatal mortality increases, thus giving no evidence of a selective elimination of males when the total prenatal mortality is revealed.—*E. C. MacDowell.*

2554. McPhee, Hugh C., and Sewall Wright. **Mendelian analysis of the pure breeds of livestock.—III. The shorthorns.** Jour. Heredity 16: 205–215. *4 illus.* 1925.—The present study is an attempt to interpret the history of the Short Horn on the basis of the values of certain Mendelian coefficients. The coefficient of inbreeding measures the decrease in heterozygosis relative to the foundation stock. The average inbreeding of the breed, the bulls, and the cows, and the relationship of the breed *inter se* and to Favorite and Champion of England (the two principal sires) is given from 1780 to the present time. These are compared with the coefficients for Bate's Dutcheses, an intensely inbred strain. The present breed coefficient of inbreeding of 26% indicates the elimination of more than $\frac{1}{4}$ of the heterozygosis of the foundation stock. The breed is now a fairly homogeneous unit, and on account of its size it will be enormously more difficult to disturb the present equilibrium by the introduction of the blood of such sires as Favorite and Champion of England. [See also Bot. Absts. 14, Entry 2644.]—*R. C. Cook.*

2555. Mangelsdorf, P. C. **A new method of corn breeding.** Seed World 14^7: 13–14. 1923.—The author describes the method of corn breeding in use at the Connecticut Agric. Exp. Station.—*M. T. Munn.*

2556. Muller, H. J. **Mental traits and heredity.** Jour. Heredity 16: 432–448. *1 illus.* 1925.—This case (1st pointed out by Popenoe) was investigated through a series of mental tests, as given by Helen Koch, in Texas, to twins reared together. A probability of 386 to 1 that these twin sisters are genetically identical has been adduced by a new method, involving comparison of their differences (or likenesses) in definite physical traits with the differences in these traits between them and their other sibs. They were reared apart from birth onward, being 30 when tested. Though in the same general social class, their foster-parents, amounts of schooling, occupations, and adult lives have been extremely different. Intelligence tests agreed remarkably closely: J scored 153, B 156, on "Army Alpha;" J 62, B 64, on "Otis' Advanced;" these are all 'Very Superior' scores, and such a coincidence among adults of their group would not have occurred once in 200 trials if the tests had no genetic significance. Results therefore show comparative lack of influence of environic differences of types here involved (for example, schooling) on such features of intelligence as these tests study, and, correlatively, the approximate genetic reliability of these tests, when confined to a given social class and territory. In striking contrast are the results of non-intellectual mental tests—Downy Will-Temperament, Pressey Emotional and Social Attitude, Kent-Rosanoff Association, and tapping tests—which consistently showed great differences (about as great as those given by persons taken at random), apparently explained by the life-histories. This demonstrates that the psychic differences measured by the latter tests have very little genetic basis, though other work has indicated the tests to be significant psychologically. The conclusion follows that many "non-intellectual" mental traits heretofore shown in pedigree charts and interpreted as hereditary have merely been handed down through training, imitation, or persistent familial environments.—*Author.*

2557. Nichols, J. E. **Segregation in halfbred sheep.** Jour. Heredity **16**: 401–408. *5 illus.* 1925.—The distinguishing features of general body conformation, head form, and fleece characters were used to trace evidence of segregation in the F_2 of the Border Leicester × Cheviot sheep cross. In the F_1 some variation, particularly of details of fleece characters, was found, but this variation was restricted to a range strictly intermediate between the parental types. In the F_2 the range of variation was considerably increased and the individuals could be classified according to type. Among the offspring of 114 F_1 ewes, 34 were typical Border Leicesters, 115 were of F_1 "Halfbred" type, 36 were indefinite (with 3 almost typical Cheviots), and 1 was a typical Cheviot. In the indefinite class were animals with B.L. fleeces on Cheviot bodies, B.L. fleeces on Halfbred bodies, Cheviot fleeces on B.L. bodies, Cheviot fleeces on Halfbred bodies, and Halfbred fleeces on Cheviot and B.L. bodies. The demarcation of these types was not sufficiently definite to warrant separate classification, but the last 2 types were comparatively few in number.—The facts are interpreted on the basis of a series of main and modifying Mendelian factors.—*Author.*

2558. Pissarev, V. **Der gegenwärtige Zustand der Pflanzenzüchtung in Russland. [The present state of plant breeding in Russia.]** Zeitschr. Pflanzenzucht. **10**: 221–253. 1925. —In spite of untoward conditions, plant and seed breeding in Russian experiment stations has developed steadily, including significant research and practical service. This development was parallel with that of agricultural experimentation, which was based on the recognition of the extraordinary variety of physical regions comprising Russia as a whole. This has led to the organization of a few larger district stations to serve each definite physicogeographic area. To these stations falls the responsibility for solving the special agricultural problems of the different subdivisions. Plant breeding will develop only where agriculture itself seeks more productive plants. Before the revolution, the main consumers of pedigreed seed were the gentlemen farmers, who practiced selection on the basis of their own experience. Yet most of their varieties of wheat, rye, oats, barley, and potatoes had come from other European countries. Shortly before the war, American influence was stronger, resulting in the introduction of many varieties of maize, sorghum, and legumes; but these did not reach the small farmers. They were all concerned with their local problems; and, previous to the revolution, occasional crop failures, attended by complete consumption of local supplies, resulting in introducing western European seed of wholly unknown origin, often with significant results. After the civil war, among the problems involved in improving conditions for the small farmers, that of better seed took 1st place. Experiments had shown that improved varieties would give an increase of 30–40% over chance local material. Every resource of the Russian plant breeding organizations was exhausted, thus leading to importation of new sorts. This should be followed by a gradual modification in the organization of farming. The Government is allotting all the support to plant breeding that is possible under present conditions. There follows a detailed discussion of the breeding work under way in 13 experiment stations and special discussions of Turkestan, the Caucasus, and the Ukraine.—*E. B. Babcock.*

2559. Punnett, R. C. **An early reference to Mendel's work.** Nature **116**: 606. 1925.—It is suggested that Focke came upon Mendel's work by a reference in H. Hoffman's "Untersuchungen zur Bestimmung des Werthes von Species und Varietät," Giessen, 1869.—*O. A. Stevens.*

2560. Punnett, R. C., and M. S. Pease. **On the pattern of the Dutch rabbit.** Jour. Genetics **15**: 375–412. *Pl. 14–22, fig. 1–5.* 1925.—In agreement with Castle and Pap, 4 factors are assumed to account for the wide variation in the white markings of the Dutch series of rabbits, from almost pure white to self colored. The F_2 of a cross between typical Dutch (*SSTT*) by white Dutch (*sstt*) gave fairly continuous series ranging between the grades of the original parents in frequencies closely agreeing with expectation. The most certainly recognized of all grades are the parental types, each of which appears in the ratio of 1 in 16. The F_2 (551 individuals) of a cross between deep Dutch (*PPsstt*) by typical Dutch (*ppSSTT*) showed full range of variations from white Dutch to almost self-colored animals, a range considered inexplicable on the basis of multiple allelomorphs. Frequencies for the various classes support the conclusion that no linkage or multiple allelomorphs are involved. Asymmetry and minor variations indicate that the pattern is influenced by causes still unanalysed.—*E. C. MacDowell.*

2561. Rehder, A. **Amelasorbus, a new bigeneric hybrid.** Jour. Arnold Arboretum **6**: 154–156. 1925.—A description is given of a plant intermediate in character between *Amelanchier florida* and *Sorbus sitchensis*. The plant was found on Elk Butte, Clearwater County, Idaho, growing in a group where these plants were present. It differs from *Amelanchier* in having larger, more coarsely serrate, occasionally pinnate or lobed leaves, in the villous apex of the bud scales, in the compound inflorescence, shorter petals, distinct styles and larger fruit with upright or nearly upright sepals, shorter false partitions and dry, poorly flavored flesh. From *Sorbus* it differs in having mostly simple leaves, smaller not viscid winter buds, smaller paniculate inflorescences with racemose branches, oblong petals, 4 to 5 styles and dark colored pruinose fruit with long ovate lanceolate sepals. Cultivated specimens from the seed of the plant are growing at the Arnold Arboretum. The pinnate leaves are irregular and resemble those of other bigeneric hybrids between *Aronia* and the Aucuparia section of *Sorbus*.—*Mary Ellen Peck.*

2562. Riddle, Oscar. **On the sexuality of the right ovary of birds.** Anat. Rec. **30**: 365–383. *1 pl., 5 fig.* 1925.—Data are supplied showing the frequent persistence of the right ovary in fowls, pigeons, and many or most other birds, also the normally ovarian character of these glands. Cases of testicular development within the right ovary following removal of the left ovary of young chicks, as observed by Benoit and his predecessors who failed adequately to evaluate their results, are cases in which sex reversal has been enforced upon the growing bird. The wrongly interpreted experiments of Benoit and other contribute to the physiological sex theory at 2 points; 1st, by providing an additional kind of evidence that the 2 sides of the bird's body are not equally favorable for the growth of testis and ovary, 2nd, by adequately demonstrating sex reversibility in the bird by a new means applied at a hitherto untested stage in the life-cycle, namely, during growth in postembryonic periods. In earlier work these reversals were limited to means applied at still earlier stages (Whitman, Riddle) or during the later adult life (Crew, Riddle) of the bird.—*Author.*

2563. Schaffner, J. H. **Synapsis considered as a sexual phenomenon.** Ohio Jour. Sci. **25**: 183–189. 1925.—The author regards the theory of the individuality of the chromosome as established. Reduction division shows no special deviation from ordinary vegetative karyokinesis except as it is modified by the synaptic properties of the chromosomes during the prophase and metaphase. Re-examination of original materials, studied from 1896 on, confirms the conclusion that synapsis involves: 1st, telosynapsis followed by true parasynapsis, a looping or folding of the synaptic mates; 2 stages in the life cycle in which primary sexual states arise, 1st, in gametes including both cytoplasm and nucleus, 2nd in synaptic chromosomes. Synapsis is then a sexual act due to sexualization (+ and −) of synaptic mates. Selective mating of univalents is due to specific heredities. Sexualization begins with protochromosome stage. It may disappear before parasynapsis is complete as Sears described for Leontodon (Taraxacum) and as Gates described for certain Oenothera mutants. Incomplete or improper sexualization of bivalents is regarded as an important cause of the irregular distribution of chromosomes.—*Author.*

2564. Schaffner, J. H. **The influence of the substratum on the percentage of sex reversal in winter-grown hemp.** Ohio Jour. Sci. **25**: 172–176. 1925.—Experiments carried on to control the percentage of sex reversal by controlling the length of the daily illumination period indicated that the substratum might be a factor in reversal in association with the light period. Hemp grown in pure quartz sand supplied with nutrient solution decidedly deficient in nitrogen shows that, in spite of high mortality, the substratum has a marked influence in preventing sex reversal when a suitable light period is maintained. Instead of an expected average reversal of about 90% for the staminate plants and about 83% for the carpellate plants, the sand plants showed only 33% reversal of staminate individuals and no carpellate individuals, the entire absence of reversal in the carpellate plants probably being due to great mortality soon after bloom began. With well manured soil or even well rotted pure manure, the percentage of sex reversal in any experiment is very close to expectation. Although a primary cause of sex reversal in hemp is the relative length of daylight and darkness, the percentage is dependent on and can only be attained with suitable substratum and proper maturity.—*Author.*

2565. Scheidt, Walter. **Beiträge zur Geschichte der Anthropologie. 5. Von Darwin**

bis zur Wiederentdeckung der Mendelschen Gesetze. [Contributions to the history of anthropology. 5. From Darwin to the rediscovery of the Mendelian law.] Arch. Rass.- u. Gesellschaftsbiol. **16**: 382–403. 1925.—This article is a summary of the more important literature on the derivation and classification of human races. The classifications of 17 authors, from von Bernier (1684) to Deniker (1900), are tabulated, and 7 pages of references, from 1686 to 1900, are given. The writer points out that in a retrospective view one recognizes 3 great periods in the development of ideas of racial distinctions, namely, Linnaeus to Cuvier, Lamarck to Darwin and from the advent of Darwin's doctrine of selection to the present. He points to Linnaeus, Lamarck, Darwin and Mendel as the significant milestones which anthropology has erected along its line of march.—*Ed. Crabb.*

2566. Schlapp, M. G. **Mongolism a chemical phenomenon.** Jour. Heredity **16**: 161–170. *3 illus.* 1925.—Evidence is presented to controvert Crookshank's hypothesis that Mongolism is a racial characteristic. Crookshank states that Mongolism is never found among Negroes and Jews; but out of 100 cases reported here, 8 are Negroes and 65 are Jews. In all the cases the mother was either approaching the menopause or was suffering from severe emotional derangements which had apparently affected the endocrines.—*R. C. Cook.*

2567. Schulz, Walther. **Darstellung versteckter Erbanlagen ohne Kreutzung durch Aktivierung von Färbungsgenen bei Albinos der Russenkaninchengruppe.** [The revealment of concealed hereditary potentialities without crossing by activation of the color factors of albino rabbits of the Himalayan group.] Zeitsch. Indukt. Abstamm.- u. Vererb. **35**: 238–256. 1924.—The article describes a continuation of a series of experiments in which the author has shown that black pigmentation can be brought out in the white fur of Himalayan rabbits (imperfect albinos) under the influence of cold on the skin of a plucked area. On crossing Himalayans with albinos, shown by appropriate crosses to transmit the agouti factor, he obtained Himalayans in which plucked white fur was replaced by black hairs, each with a white band in place of the yellow of normal agoutis. Similarly, he produced Himalayans in which plucking brought out black in the black parts of the black and tan pattern but did not bring out color in the tan and white parts. He was also able to reveal the Dutch pattern (black and white) in Himalayans into whose ancestors the Dutch factor had been introduced.—*Sewall Wright.*

2568. Shamel, A. D. **The improvement of sugar cane through bud selection.** Rept. Exp. Sta. Hawaiian Sugar Planters Assoc. **1924**: 1–120. *Illus.* 1925.—The article is an illustrated progress report upon the systematic bud selection work for the improvement of sugar-cane varieties and the Smooth Cayenne pineapple variety in Hawaii. The purpose of these studies, as carried on by this Exp. Sta. is classified under 3 heads, namely, (1) to conserve and improve the efficiency of the proved varieties for the maximum production of sugar through the isolation and propagation of valuable strains and the elimination of inferior ones, (2) to originate and develop superior, new varieties and strains through selecting, testing and propagating striking bud mutations, and (3) to develop methods for securing, handling and using adequate supplies of selected propagating material for plantation use. The progress of experimental and commercial bud selection work for the past 5 years, is described, together with a discussion of improved methods of procedure resulting from accumulated experience. The striking results in the pineapple and bud selection work are described. Brief illustrated descriptions of related bud variation and selection studies in the Washington Navel orange, Nothopanax, crotons, hibiscus, ferns and persimmon are also presented. Reports of sugar-cane bud selection practise from several plantations are published as a part of this report.—*A. D. Shamel.*

2569. Snyder, L. H. **Human blood groups and their bearing on racial relationships.** Proc. Nation. Acad. Sci. [Washington, D. C.] **11**: 406–407. 1925.—Recessive agglutinins appear to be the primitive condition. Dominant agglutinins arise separately by mutation in different regions. Criticism is made of the "biochemical index" as a measure of racial relationship. In general, the assembled blood group data conform to the known anthropological facts.—*E. C. MacDowell.*

2570. Steele, Dewey G. **Studies on inheritance in pigeons. V. Lace or silky, a sex-linked character.** Jour. Heredity **16**: 321–327. 3 *illus.* 1925.—The lace or silky character in birds is due to a structural defect in the feathers which causes the individual barbs to

remain practically free from one another. Breeding data obtained by Frank E. Pollex show that silkiness in pigeons is inherited as a recessive sex-linked character. There is some indication of this in the literature. In the fowl a similar defect is recessive but not sex-linked. Though bred in European countries for at least 2 centuries and in America for about 50 years, the Lace Pigeon is still a rare variety. Low fecundity and difficulties in rearing may account for its scarcity. At present, silkiness in pigeons is most commonly associated with white plumage and the "fantail" type.—*Author.*

2571. Stockard, Charles R. **Alcohol a factor in eliminating racial degeneracy.** Amer. Jour. Med. Sci. **167**: 469–477. 1924.—One table, previously published, is given showing the results of matings of normal guinea pigs with alcoholic and normal mates. Alcohol seems to act as an eliminator of less resistant germ cells in guinea pigs and may have acted thus in man. —*E. C. MacDowell.*

2572. Tischler, G. **Die cytologischen Verhaltnisse bei pflanzlichen Bastarden.** [The cytology of plant hybrids.] Bibliographia Genetica **1**: 39–60. 1924.—The author gives a review of the cytological studies of hybrids, especially those dealing with chromosome behavior in species crosses.—*Iva Burgess.*

2573. [Vavilov, N.] Вавилов, Н. **О междуродовых гибридах дынь, арбузов и тыкв.** [Inter-generic hybrids of melons, watermelons and squashes.] (With English summary.) Труды по Прек. Бот. и Селекции. [Bull. Appl. Bot. & Plantbreed.] **14**[2]: 3–35. *5 figs.* 1925.—This paper is a study of overlapping of specific and generic characters in certain Curcurbitaceae. Over 1000 crosses between different forms of watermelons, muskmelons, cantaloupes and squashes were made, the varieties being listed in the Russian text. The genera to which these different curcurbits belong cannot be crossed. Crosses between varieties and species within the genus were successful. Watermelon, muskmelon, cucurbita and cucumber showed no evidence of parthenogenesis. However, cases of parthenocarpy were found. The genera of cultivated Curcurbitaceae differ in the character of their pollen, in chromosome number, and in their behavior toward parasites. The data indicate that melons and squashes are more closely related than squashes and watermelons, or melons and watermelons. The so-called natural hybrids between melon and watermelon described in literature (Korshinsky) are regarded by the author as phenomena of character-overlapping of genera and species. A race of watermelon with entire leaves and a variety of muskmelon with dissected leaves was found. A race of watermelon having fruits indistinguishable in external appearance and color from squashes was also discovered. Tables in great detail of hereditary varying characters including seed color and shape, pulp color, texture, scent and flavor, color and pattern of rind, etc., are appended in English. There is no fact basis for the widespread belief in the crossing of watermelons, muskmelons, and squashes when planted together.—*Orland E. White.*

2574. Verret, J. A., Y. Kutsunai, U. K. Das, Raymond Conant, and Twigg Smith. **A method of handling cane tassels for breeding work.** Hawaiian Planters Rec. **29**: 84–94. *Illus.* 1925.—(See Bot. Absts. 15, Entry 1719.)

2575. Vidal, R. **Breeding work with henequen and sisal.** Jour. Heredity **16**: 9–12. *3 illus.* 1925.—Crosses between *Agave fourcroydes* and *A. sisalana* are reported. It is hoped that some of the hybrid plants may combine the good points of both parents. Hybridization of *Agave* offers a number of practical difficulties, and the technique is described. The F_1 plants show unusual diversity.—*Robert Cook.*

2576. Weatherwax, P. **Anomalies in maize and its relatives III. Carpellody in maize.** Bull. Torrey Bot. Club **52**: 167–170. 1925.—A detailed description of an abnormality in maize designated "carpellody" is given. Carpellody results from the metamorphosis of the rudimentary stamens, in the pistillate flowers, into imperfectly formed pistils. The transformed structures seem to be stimulated to full development by fecundation in the ovary at the base of which they are attached. The author points out the inconsistency of the carpellodia in maize having duplex styles, with Elda R. Walker's theory (Univ. Nebraska Studies **6**: 203–218. 1906) as to the constitution of the gynoecium of some grasses.—*J. H. Kempton.*

2577. Weatherwax, P. **Notes on grasses II.** Proc. Indiana Acad. Sci. **34**: 227–228. 1925.—A preliminary account of carpellody and many flowered spikelets in maize is given.

Carpellody is an abnormality in which 1 or more of the rudimentary stamens in the pistillate flowers are metamorphosed into the resemblance of pistils. Though the style and stigma of these are very like the normal organs there is no true ovarian cavity or ovule. This peculiarity is inherited not as a seed but as a plant character. Many flowered spikelets is an abnormal condition found in the tassels of maize in which the number of flowers in a spikelet is increased to 3 or many more, the increase being accompanied by a change in sex, with the pistils instead of the stamens being functional. Changes in the rachilla in the direction of a cob have been noted in extreme cases. The abnormality is supposed to be hereditary.—*J. H. Kempton.*

2578. Weatherwax, P. **The reported origin of Indian corn from teosinte.** Proc. Indiana Acad. Sci. **34**: 225–227. 1925.—The origin of maize from teosinte, as reported by R. H. Moulton in the press and by Blaringhem from the experiment of Bento de Toledo (Ann. Sci. Nat. Bot. 6: 245–263, 1924), is discussed. The asserted achievements of Burbank and Bento de Toledo are discounted, as the evidence indicates that both experimenters began their selections not with pure teosinte but with teosinte-maize hybrids.—*J. H. Kempton.*

2579. Wriedt, C. **Formalismen in Husdyravlen.** [**Formalism in livestock breeding.**] Nordisk Jordbrugsforskning **1923**: 513–523. *Fig. 1–4.* 1923.—The article is a protest against the attention paid in the standards of the breeds of livestock to characteristics (color and conformation) of no economic importance.—*Sewall Wright.*

HORTICULTURE

F. C. Bradford, *Editor*

(See also in this issue Entries 2172, 2208, 2274, 2332, 2417, 2442, 2461, 2513, 2568, 2573, 2659, 2752, 2848, 2856, 2898, 2900, 2909, 2957, 2973, 3017, 3018, 3036, 3038)

2580. Anonymous. **Brisbane Jubilee R. N. A. Show.** Australian Sugar Jour. 6: 348. 1925.—There was demonstrated at the Jubilee Show of the Royal National Agricultural and Industrial Association at Brisbane a method of packing bananas in the bunch, which, if it proves successful, will obviate much of the waste now incurred in railing bunches in trucks, will save the expense of cases, and should result in landing the fruit in much better condition than that in which it arrives as at present handled. The method consists in swathing the whole bunch in a sleeve of straw knit together with twine.—*Nellie E. Fealy.*

2581. Anthony, R. D., and J. H. Waring. **Fertility in the apple orchard.** Pennsylvania Agric. Exp. Sta. Bull. 192. *1–15. Pl. 1–10.* 1925.—A cover crop, without fertilizers, is recommended for the mature cultivated orchard. In cases where either the cover crop or the trees grow poorly, nitrate of soda may be used at the rate 3–5 pounds per tree. For the mature sod orchard, 5–10 pounds of nitrate of soda per tree should be used. In a leguminous sod, half as much nitrate should be applied. Acid phosphate is sometimes of value to the cover crop or sod.—*H. W. Thurston, Jr.*

2582. Barker, B. T. P., and Otto Grove. **Some investigations on the bottling of cider.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 70–91.* 1924.—As the consumption of cider extends into districts away from production centers, bottling rather than selling from casks becomes desirable. Some of the many difficulties encountered in bottling ciders are being studied. In this paper are reported studies on changes in composition after bottling of many different ciders, the influence of the time of bottling and of storage condition prior to bottling upon behavior in the bottle, and concerning any possible relationship between the natural rate of fermentation of cider and the time at which it can be bottled to best advantage. With 11 ciders bottled at specific gravities ranging from the standards appropriate for dry to those appropriate for sweet ciders, the loss in specific gravity after 10 months in the bottles was small. In all cases enough fermentation had occurred to bring the cider to a sparkling condition; acidity changes varied, because, it is thought, of differences in the action of acid-destroying bacteria. The behavior of cider from the time of filtration onward varies greatly according to the condition of storage. Storage in wood results in considerable and long continued loss in specific gravity, while storage in bottles or larger air-tight containers prevents marked specific gravity changes in filtered ciders more than 3 or 4 months old. Transfer

of cider more than 3 or 4 months old from large air-tight containers to bottles does not generally cause unfavorable bacterial disturbance, but transferring from wood to bottles is likely to be followed by bacterial trouble. The slightness of the specific gravity change in cider bottled after it is 3 months old seems to be due to deficiency in nitrogenous material for the growth of yeast. The amount of deposit in the bottle accompanying bottling in February or later (in England), is, with a given cider, approximately correlated with the age of the cider at the time of bottling, but bottling direct from the filter earlier than February gives variable results.—*W. H. Chandler.*

2583. Barker, B. T. P., and O. Grove. **Sulphur dioxide as a preservative for fruit.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 97–108.* 1924.—Perfectly sound fruit was packed in glass jars and sulphur dioxide poured over it. The solutions varied in strength from 0.02 to 2.0%. Apples, plums, raspberries, loganberries, black and red currants, blackberries, gooseberries, strawberries and oranges were used. Solutions containing 0.06 to 0.08% of sulphur dioxide were satisfactory. The fruit kept well except that with black and red currants and gooseberries there was an undesirable hardening of the skin. There was a loss in sulphur dioxide from the solution greater than the amount absorbed by the fruit. For preservation in sulphur dioxide it is necessary that the fruit be in air-tight containers. Fruit stored in this way has the red color bleached out and tends gradually to lose the ability to gel when made into jam.—*W. H. Chandler.*

2584. Beckel. **Gesamtergebnis der Sortenanbauversuche mit Rotkohl 1922–24.** [Report on variety trials with red cabbage, 1922–1924.] Mitteil. Deutsch. Landw. Ges. **40**: 637–641. 1925.—Five varieties were tested at 7 stations during 1922, 1923 and 1924. Details of dates of seeding, setting out, weather conditions, harvest, etc., are given in tabular form.—*A. J. Pieters.*

2585. Beckel. **Gesamtergebnis der überwinterungsversuche mit Rotkohl in den Jahren 1922–25.** [Report on storage experiments with red cabbage, 1922–1925.] Mitteil. Deutsch. Landw. Ges. **40**: 641–642. 1925.—Five varieties were stored and the percentage of cabbage marketable in spring was determined. The highest figure was 73.5; the lowest, 45.9.—*A. J. Pieters.*

2586. Cromelin, L. M. **The beverage trees.** Amer. Forests and Forest Life **31**: 226–230. *8 fig.* 1925.—This paper describes trees and shrubs producing the coffee, cacao, tea and other beverages of commerce.—*Chas. H. Otis.*

2587. Dallimore, W. **Arboretum notes.** Quart. Jour. Forest. **19**: 139–148. *2 pl.* 1925. —This article deals with the hardier kinds of magnolias used for decorative purposes in the garden and arboretum. Soil requirements, methods of propagation, planting and tending are described, together with descriptions of some 25 species and hybrids.—*P. S. Spokes.*

2588. Davis, M. B. **Modern orchard practices.** Canada, Dept. Agric. Bull. n.s. 18. *1–45. Illus.* 1923.—A detailed description is given of methods of training the young tree, maintenance of fertility, systems of cultivation, cover crops, spraying, dusting, thinning, renovation of the neglected orchard, scraping, cleaning, and tree surgery, with a spray calendar for insecticides and fungicides.—*T. G. Major.*

2589. Driggers, Bryley F. **The effect of the height of water table upon cranberry production.** Amer. Cranberry Growers Assoc. Proc. Ann. Meeting **55**: 14–16. 1925.—This is a contribution from the New Jersey Agric. Exp. Sta., giving the effects of holding the water table at various heights on a cranberry bog. Data is presented for 2 years, showing rot to be greatly increased by holding the water table high; plots with the water table 0 to 5 inches below the surface had 19% to 35% rot, while on plots with the water 10 to 15 inches below the surface there was 6% to 16% of rot. On plots where the water was held high until blooming and then lowered there was no increase in rot, indicating that holding water high to prevent spring frost injury is a safe practice.—*C. S. Beckwith.*

2590. E., S. **Eine geschichtliche Plauderei über die Herkunft der Kirschen.** [A historical chat about the origin of the cherry.] Osterreich. Gartenzeitg. [Vienna] **57**: 90–91. 1925.—The true home of the cherry is in the territory south of the Caspian and Black seas. In middle Europe it has been known for a long time; in fact, cherry pits have been recognized in the palings of the earlier stone age, as in the urns of the bronze and iron age. The account of

Pliny to the effect that Lucullus first brought the cherry to Rome in 64 B.C. is therefore incorrect; he was speaking of an especially large and beautiful variety.—*H. Cammerloher (translated).*

2591. Friese, Walther. **Meerrettich und Meerrettichkonserven. [Horse-radish and preserved of horse-radish.]** Zeitschr. Untersuch. Nahrungs- u. Genussmittel **49**: 194–203. 1925.—A study, chiefly chemical, of *Cochlearia armoracia* L. and its products, with a brief account of methods of cultivation. Analytical results, based on material from several regions in Germany and Bavaria, are tabulated.—*E. E. Stanford.*

2592. Goude, H. **New varieties of black currants at Westwick.** Jour. Ministry Agric. Great Britain **31**: 763–767. *4 fig.* 1924.—Details are given concerning the need and method of producing by hybridization some new varieties of black currants, 2 of which are now replacing the older standard varieties in some commercial plantations in Norfolk, England.—*M. B. McKay.*

2593. Griebel, C., und M. Nothnagel. **Zur Verwendung von Apfelpektin enthaltenden Erzeugnissen bei der Herstellung von Marmaladen, Gelees und ähnlichen Fruchtdauerwaren. [Use of products containing apple pectin in the manufacture of marmalades, jellies, etc.]** Zeitschr. Untersuch. Nahrungs- u. Genussmittel **49**: 352–359. 1925.

2594. Grove, Otto. **Cider making trials for the season 1923–24.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 92–96.* 1924.—This paper reports results in making cider from a number of varieties of acid, bitter-sweet, and culinary apples and from a number of samples of mixed apples. Experiences with pasteurization are reported.—*W. H. Chandler.*

2595. Hansen, N. E. **Flowers every day in the year.** South Dakota Agric. Exp. Sta. Bull. 208. *677–690. 15 illus.* 1924.—Sixty related groups of tested flowers are given, mostly by common names, with directions for growing in South Dakota.—*E. J. Petry.*

2596. Hoare, A. H. **The cultivation of nuts.** Jour. Ministry Agric. Great Britain **31**: 647–658. 1924.—A popular account is given of the growing and harvesting of nuts, including filberts, cob nuts, walnuts and chestnuts, of which only the first 2 are grown commercially in Great Britain.—*M. B. McKay.*

2597. Irish, J. H. **Fruit juice concentrates.** California Agric. Exp. Sta. Bull. 392. *1–20.* 1925.—This is a supplement to Ibid. 359. Excellent concentrates may be made from the juices of oranges, lemons, grapes, pomegranates, apples, raspberries, loganberries and blackberries. Concentration by freezing was found to be the best method for the preservation of the color and flavor of the fresh juice but the product was less concentrated than that produced by vacuum concentration in a glass-lined vacuum pan. The aroma of the fresh juice lost during concentration may be recovered from the condensate by redistillation and may then be returned to the concentrate. When kept in cold storage, concentrates should be stored in sealed containers to prevent the absorption of disagreeable odors. A concentrate of 72° Balling keeps several weeks at ordinary temperatures without spoiling. Cold storage at a temperature of 32°F., or lower, preserves it indefinitely. If concentrates are to be shipped to tropical climates in containers that may permit infection with yeast or mold, sodium benzoate should be used as a preservative. Pasteurization at 175°F. is a safe means of preserving fruit concentrates, but storage of this product at room temperature results in some loss of color and change in flavor.—*A. R. C. Haas.*

2598. Jones, H. A., and E. L. Garthwaite. **The growing and handling of head lettuce in California.** California Agric. Exp. Sta. Circ. 295. 1–36. 1925.—Immature heads of lettuce wilt more readily than firm mature heads. If cut after a rain or irrigation or before frost or dew is gone, the leaves break easily in handling. Slightly wilted heads carry better in transit. Lettuce heads that show signs of development of seed stalk, that have burst, have tip burn, or shows signs of disease infection should be discarded in the field. Several cuttings should be made to obtain heads at the best stage of maturity.—*A. R. C. Haas.*

2599. MacFarland, Margaret. **Preservation of fruits and vegetables for home use.** Canada, Dept. Agric. Bull. 93 (Revised). *1–51. Illus.* 1921.—The topics discussed are sterilization, steps in the canning process, fractional or intermittent sterilization, open kettle method, steam pressure method, non-cooking method, jelly making, preservation of vegetables by fermentation and salting, home drying and favorite recipes.—*T. G. Major.*

2600. Macoun, W. T. **Report of the Dominion Horticulturist.** Canada, Dept. Agric. Exp. Farms Ann. Rept. **1918–1919:** 28–32. 1920.—Special attention was paid to experiments on the source of potato seed, time of planting potatoes, vegetable seed production, vegetable breeding, control of cabbage root maggot, and the canning of fruits and vegetables.—*T. G. Major.*

2601. Macoun, W. T. **Interim report of the Dominion Horticulturist.** Canada, Dept. Agric. Exp. Farms, Div. Hort. Rept. **1920:** 1–42. *7 fig.* 1921.—The following new apple varieties are described: Currie, Hume, Merlin, McSweet, Omesal, Orsino, Oshtosh, Patricia, Peace, Shishee, Spiotta, Spiro, Sweetosh, Wilgar, Lora, Printosh and Rosilda. Results are given of experiments on tree surgery, close-planting of a Wealthy orchard, and individuality in apple trees. Lists and descriptions are given of plum, grape, currant, gooseberry and strawberry varieties.—Potatoes planted between May 10 and 15 gave the highest yields. Pickaninny, a new early black sweet corn, has been originated from a cross of Sweet Squaw and a black strain of unknown origin. Other projects reported include a comparison of early tomato varieties, production of celery seed, and lettuce and cucumber growing in the greenhouse.—Short descriptions are given of 16 hedge plants and lists of suitable varieties of iris, paeonies and perennial phlox.—*T. G. Major.*

2602. Macoun, W. T. **Interim report of the Dominion Horticulturist.** Canada, Dept. Agric. Exp. Farms, Div. Hort. Rept. **1921:** 1–48. *4 fig.* 1922.—Three new varieties of apples are described: Lawfam, Lowleth, and Miltosh. The importance of using hardy stocks for root grafting is emphasized. A 3-year spraying test has shown that lime-sulphur is superior to Bordeaux mixture, putting a better finish on the fruit and causing less russeting. Studies were continued on the value of different apple varieties in cider making. In an experiment with strawberries it has been shown that the stolons formed early in the season give the greatest yield of fruit and that there is a correlation between yield and generation.—Selection and breeding work with asparagus, pole beans, sweet corn and garden peas were continued. A study was made of the cost of producing greenhouse cucumbers.—Lists are given of rose, gladiolus, Darwin tulip and chrysanthemum varieties, with brief descriptive notes.—*T. G. Major.*

2603. Macoun, W. T. **Report of the Dominion Horticulturist.** Canada, Dept. Agric. Exp. Farms, Div. Hort. Rept. **1922:** 1–42. *8 fig.* 1923.—An outline is given of the work on crosses of apple varieties and reciprocal crosses with *Pyrus baccata* and *Pyrus malus*. Eight new apple varieties are described: Bethanis, Keetosh, Maclaw, Newtosh, Spimil, Spiza, Stontosh, and McPrince. Studies were continued on plum hybrids, plum × cherry crosses, cherry, strawberry, raspberry and gooseberry breeding and loganberry × raspberry crosses. A preliminary report is given on apple self-pollination studies. A survey was made of the blueberry industry in parts of Quebec, New Brunswick, and Nova Scotia. The fan system of training grapes was found to be the most satisfactory.—Varietal tests were conducted with tomatoes, celery, sweet corn, peas, beans, rhubarb, beets, Brussels sprouts, cabbage and lettuce.—Fifty-four ornamental shrubs hardy at Ottawa and 21 varieties of geranium are described.—*T. J. Major.*

2604. Macoun, W. T. **Report of the Dominion Horticulturist.** Canada, Dept. Agric. Exp. Farms, Div. Hort. Rept. **1923:** 1–54. *Fig. 1–13.* 1924.—Seven new apple varieties are described: Rosetta, Spiland, Spimore, Spiretta, Sweetmac, Toshkee and Toshprince. Crosses were made between domestica and hybrid plums. Studies were conducted in the self-pollination and compatibility of apple varieties, and on the transmission of sex and the fall-bearing habit in strawberry crosses. Maturity was found to be the main factor in the prevention of the "Jonathan breakdown" disease. Descriptions are given of the leaf characters of a number of apple varieties.—In a test of 43 tomato varieties, Alacrity was found the most suitable for regions where the season is short. Studies were continued of a number of seedling potatoes, cross-bred garden peas, early maturing strains of sweet corn, improvement of Emerald Gem muskmelons, cabbage varietal tests, and the testing of commercial vegetable varieties for trueness. An experiment was carried out on the forcing of cucumbers in greenhouse.—Descriptions are given of a number of annual and perennial climbing plants.—*T. G. Major.*

2605. Macoun, W. T. **The strawberry and its cultivation in Canada.** Canada, Dept.

Agric. Bull. 92. *1–39. 8 fig.* 1919.—Instructions are given for the establishment and management of a strawberry plantation. Lists are given of the varieties best suited to different localities, with descriptions of some of the most productive. The chief insect pests and diseases are discussed.—*T. G. Major.*

2606. Macoun, W. T., and M. B. Davis. **Bush fruits and their culture in Canada.** Canada, Dept. Agric. Bull. 94. *1–54. 20 fig.* 1920.—Detailed recommendations are given regarding the propagation, soil preparation, planting, cultivation and fertilization and varieties of currants, gooseberries, raspberries, blackberries, dewberries and loganberries. Short sections are appended on the insects and diseases affecting these fruits.—*T. G. Major.*

2607. Maas, J. G. J. A., and J. F. Schmole. **De invloed van den tapper ob de productie.** [The influence of the tapper on production.] (English summary.) (Mededeel. Alg. Proefsta. A. V. R. O. S. Rubberser. 37.) Rubbercult. **7**[6]: 1–11. 1923.—Through field experiments the writers find that the personal equation of the tapper enters into the latex yield of the trees. Yields secured by the poorest and the best tapper under the same conditions may vary as much as 30%. Production per tree decreases if the tapper is assigned too many trees. For the east coast of Sumatra, 400 to 500 trees was found to be the best unit.—*Cecil Yampolsky.*

2608. Manning, A. J. **Orchard improvement instruction in Herefordshire.** Jour. Ministry Agric. Great Britain **31:** 355–360. *2 fig.* 1924.

2609. Mehling. **Die Behandlung der Reben und Weinbergböden mit Schwefelkohlenstoff.** [The treatment of grape vines and vineyard soils with carbon bisulphide.] Mitteil. Deutsch. Landw. Ges. **40:** 561–563. 1925.—After reviewing the older work, the author presents arguments for and against the carbon bisulphide treatment and points out that the arguments against the use of this disinfectant are not well founded.—*A. J. Pieters.*

2610. Payne, I. W. **Our ornamental mountain laurel.** Amer. Forests and Forest Life **30:** 600–602. *3 fig.* 1924.—This article concerns the attractiveness and culture of *Kalmia latifolia.*—*Chas. H. Otis.*

2611. Ravaz, M. L., et M. G. Verge. **Recherches relatives à la taille de vignes grêlés.** [Pruning investigations with grapevines damaged by hail.] Ann. École Nation. Agric. Montpellier **18:** 72–88. *Fig. 1–4.* 1921.—Grapevines were pruned by 4 methods at intervals between April and June. Cutting off the current season's growth during April gave results which compared favorably with those obtained with unpruned vines. Other methods such as cutting back young canes or cutting into the old wood were unsatisfactory. No recommendations could be made as regards pruning grapevines damaged by hail because no hail fell during the period of experimentation.—*F. F. Halma.*

2612. Reed, George M. **The test garden for beardless Irises.** Brooklyn Bot. Gard. Rec. **14:** 115–118. 1925.—A test garden for beardless (Apogon) Irises, including Japanese, Siberian, and Spurian varieties, has been established at the Brooklyn Botanic Garden in cooperation with The American Iris Society. The project includes (1) identification of varieties and nomenclature; (2) description and illustrations of varieties; (3) classification; (4) seedlings; (5) culture, including transplanting, soil conditions, fertilizers, and diseases and their control.—*C. S. Gager.*

2613. Russell, P. **Americanizing the Japanese cherry.** Amer. Forests and Forest Life **31:** 161–164. *6 fig.* 1925.

2614. Shutt, F. T. **Fertilizers for flowering plants, vegetables, small fruits and lawns.** Canada, Dept. Agric. Exp. Farms Exhib. Circ. 104. 1–2. 1922.—Formulae are given of suitable fertilizer mixtures for roses, peonies, perennials and annuals, potting and greenhouse soils, vegetables, small fruits, garden crops and lawns and of a liquid fertilizer for house plants, vegetables, etc.—*T. G. Major.*

2615. Spinks, G. T. **The treatment of seedling apple trees to induce early fruiting.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 46–50.* 1924.—It is pointed out that young apple seedlings exhibit a "juvenile" condition during the first 4–5 years—or somewhat more—of their lives. The branches, whether long or short, tend to be slender, often spiny, with leaves apparently too small to cause fruit-buds to form. The aim of this study was to find treatments that would hasten the ending of this "juvenile" condition and cause early fruiting. Treatments that check growth, such as ringing, root pruning, growing with the roots re-

stricted in pots and working on dwarfing stocks, tended to prolong the "juvenile" condition rather than to hasten its ending, and during the early stage such treatments did not cause fruit-bud formation. Seedlings worked on vigorous stocks reached the adult stage more quickly. After trees had reached the adult stage, when larger leaves were produced, treatments such as ringing tended to hasten the beginning of fruiting.—*W. H. Chandler.*

2616. Stahl, J. L. **Propagation of deciduous fruits.** California Agric. Exp. Sta. Circ. 294. *1–24.* 1925.—This paper presents a summary of propagation methods for deciduous fruits.—*A. R. C. Haas.*

2617. Taylor, H. V. **Apple packing stations of Nova Scotia.** Jour. Ministry Agric. Great Britain **31**: 856–862. 1924.—A popular account is given of the Nova Scotia fruit districts and the methods of packing fruit for market. Much of the fruit goes to England.—*M. B. McKay.*

2618. Tinline, M. J. **Flowers for the prairie home.** Canada, Dept. Agric. Exp. Farms Exhib. Circ. 108. *1–4. 2 fig.* 1924.—The location and arrangement of flower beds are discussed and a descriptive list is given of suitable flowering shrubs, herbaceous perennials, flowers raised from roots, bulbs and tubers, and of annuals.—*T. G. Major.*

2619. Vaughan, L. H. **The National Garden Bureau's widespread influence.** Seed World 18^{1}: 18–20. 1925.

2620. White, Kirby. **Standard for vegetable varieties.** Seed World 18^{11}: 16–17. 1925.

2621. Wilson, E. H. **New plants from China.** Amer. Forests and Forest Life **31**: 85–86, 91. *2 fig.* 1925.—This article mentions *Abies Fargesii*, *Abies chensiensis* and *Abies recurvata* and gives longer descriptions of *Picea asperata*, *Picea Balfouriana*, *Picea Wilsonii* and *Rosa Hugonis.*—*Chas. H. Otis.*

2622. Zwaan, A. R. **New principle in selecting spinach.** Seed World 18^{6}: 7–9. 1925.

MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

A. J. Eames, *Editor*

(See also in this issue Entries 2377, 2532, 2577, 2845, 2949, 3028)

2623. Anonymous. **The Royal Photographic Society's exhibition.** Nature **116**: 486. 1925.—Mention is made of photomicrographs by G. H. Rodman, showing anatomy of water hyacinth and idioblasts in water-lilies.—*O. A. Stevens.*

2624. Anderson, Flora. **Unusual stipules of Acer nigrum Michx.** Proc. Indiana Acad. Sci. **38**: 259–261. *Fig. 1–14.* 1922 [1923].—Observations are noted of the variation which occurs in stipules of *Acer nigrum.* Certain trees always have a larger percentage of stipulate leaves than others.—*Edwin J. Kohl.*

2625. Andrews, F. M. **An unusual Iris.** Proc. Indiana Acad. Sci. **38**: 270. 1922 [1923]. —Observations were made that out of 60 flowers of *Iris versicolor* 3 were different in size, color and markings.—*Edwin J. Kohl.*

2626. Bohn, P. R. **Sur le sac embryonnaire des Euphorbes. [The embryo sac of the Euphorbias.]** Bull. Soc. Bot. France **71**: 576–579. *Fig. 1.* 1924.—*Euphorbia Cyparissias* L., *E. Gerardiana* Jaeq. and *E. segetalis* L. all have the normal number of nuclei and normal division of the nuclei in the embryo sac.—*C. E. Moore.*

2627. Calvert, Mary Alexandra, and Frederick Summers. **The swelling of raw cotton hairs during mercerisation without tension.** Jour. Textile Inst. **16**: T233–268. *Pl. 2, fig. 12.* 1925.—The enhanced lustre of cotton goods which is produced by "mercerisation" depends upon the swelling of the individual cotton hairs, so that they reflect light more advantageously. This swelling is accompanied by shrinkage in length, which in practice is balanced by stretching the material while it is still in the plastic condition imposed upon it by immersion in the mercerising agent, namely, caustic soda. The present paper deals with the changes in width which take place in the individual hairs during mercerisation without tension, and these data are recorded: (1) Ratios of width of unmercerised to mercerised for 38 cottons; (2) width changes in 18% caustic soda, during subsequent washing, and finally in the dry, fully mercerised state, for 11 cottons; (3) width changes of a Punjab-American cotton in caustic

soda of concentrations ranging from 2.5 to 36.7%, which show that maximum swelling is attained in 15.8% solution. "Width" was measured across the widest portion between 2 convolutions near the middle of the hair, and in each case 250 hairs were taken at random from all parts of the particular sample.—With other properties of cellulose affected by caustic soda, the maximum effect is produced by much more concentrated solutions, suggesting that the limit to the dimensional change in the cotton hair is set by the cuticle. For the botanist, the interest of the paper lies in the evidence on this point. Photomicrographs are reproduced which show that if the cuticle is snicked by a razor before or after swelling the hair in alkali, the swollen cellulose bursts through the wall. More important, however, is the proof afforded by following the changes in the hairs of a range of cottons grown in a greenhouse at the stages (1) just before the bolls burst ("uncollapsed"), (2) uncollapsed and immersed in 18% caustic soda, (3) collapsed and swollen again in 18% caustic soda, to the effect that the limit set by the cuticle to outward swelling is that of the uncollapsed hair. The "uncollapsed" cotton hair is a tubular structure comprising a cuticle, a deposit of cellulose and a more or less extensive lumen. On drying in the air it quickly collapses to a convoluted structure of bean-shaped and scarcely determinate section, and shrinks a small amount in length. In the mercerising solution, a further shortening takes place, but the cellulose swells outward until the convolutions and irregularities are smoothed out and the cuticle is distended to the dimensions it had in the boll, and inward until the lumen is almost blotted out. On washing with water, the alkali-swollen hair shrinks slightly, and it shrinks again on drying but retains throughout its regular elliptical section. If the uncollapsed hair is placed in caustic soda, it does not swell outward but the cellulose swells inward until the lumen is almost filled. These facts are supported by the evidence of cross sections prepared by a gelatin-formalin technique, measurements of which were corrected for the swelling which cotton hairs suffer in gelatin.—The cuticle of the cotton hair is thus shown to be a remarkable structure, capable of following both length and perimeter changes in the hair but incapable of distension beyond its dimensions in the unopened boll. Apparently it is able to do these things by some process of folding or wrinkling on contraction, that is, because of its structure rather than because of any special elastic properties. Supporting evidence is given by some remarkable photographs (× 1475) of the surface of a cotton hair, 31 days old, treated with 18% caustic soda, which reveal a structure of spiral bands reminiscent of re-inforced rubber tubing.—*J. C. Withers.*

2628. Cobb, N. A. **Biological relationships of the mathematical series, 1, 2, 4, etc., with a description of a new nema, Tylenchus cancellatus.** Jour. Washington [D. C.] Acad. Sci. **15**: 235–238. *Fig. 1.* 1925.—The author discusses, with a zoological example, the possibility that organisms, in their growth and reproduction, become exact or modified expressions of the mathematical series 1, 2, 4, 8, etc., any variation or modification which exists resulting from the halting of multiplication in certain cells or parts.—*Helen M. Gilkey.*

2629. Good, R. D'O. **The germination of Hippuris vulgaris.** Jour. Linn. Soc. Bot. London **46**: 443–448. *Fig. 1–3.* 1924.—Germination tests and studies were made of the fruits of the mare's tail. The embryo is straight and enclosed in a hard bottle-like endocarp closed by a plug of firm tissue. As germination begins, the stopper-like plug is pushed out by the elongating hypocotyl, the tip of which bends downward, developing a ring of horizontally spreading root hairs. Beyond this ring the radicle develops and penetrates the mud. The upper part of the hypocotyl becomes erect, bearing the endocarp on its tip. The cotyledons gradually emerge and spread out. The leaves of the first whorls are commonly 4, but range from 2 to 5. The function of the ring of root hairs is discussed; it is suggested that the chief mechanical function is the prevention of penetration of the hypocotyl into the mud.—*A. J. Eames.*

2630. Hickel, R. **L'hétéromorphisme et la roi de triple convergence. [Heteromorphism and the law of triple convergence.]** Bull. Soc. Bot. France **71**: 510–523. 1924.—Heteromorphic plants show a difference in leaves—form, size, lobing, petiolar length, phyllotaxy—in the young and in the adult stages. Differences occur also according to the nature, vigor, and position of the branches. Leaves of young plants, those of auxiblasts, and those of rhizoblasts or sprouts from roots, approach a single type. The author recommends a more careful attention to the leaves of heteromorphic plants by collectors and systematic botanists.—*C. E. Moore.*

2631. Holm, Theo. **Apios tuberosa Moench.** Amer. Midland Nat. 9: 118–136. *Pl. 7–9, Fig. 1–14.* 1924.—This is a detailed description of the external structure of the seedling and of the rhizome of the mature plant, also of the internal structure of the vegetative organs, including the aërial stem, rhizome, peduncle, leaf blade and petiole.—*Sister M. Ellen.*

2632. Holm, Theo. **Comandra umbellata (L.) Nutt.** Amer. Midland Nat. 9: 1–13. *Pl. 1–2, fig. 1–12.* 1924.—This is a discussion of the vegetative reproduction, the inflorescence and the flower, and the internal structure of the vegetative organs. The life cycle was not traced from the seedling stage, but not a single example among the older plants would demonstrate the parasitic habit.—*Sister M. Ellen.*

2633. Holm, Theo. **Hibernation and rejuvenation exemplified by North American herbs.** Amer. Midland Nat. 9: 439–512. *Pl. 1–5, fig. 1–46.* 1925.—A study of the organs concerned in hibernation and rejuvenation of a large number of North American perennial herbs. The organs of the seedlings as well as the vegetative structures of the more mature plants are figured and described.—*Sister M. Ellen.*

2634. Langlet, Olof F. I. **On the embryology of Adenostyles.** Svensk Bot. Tidskr. 19: 215–231. *3 fig.* 1925.—The work deals with the development of the embryo-sac in *Adenostyles albifrons* and of the antipodals. The function of the antipodals is discussed, comparisons are made with other members of the family Compositae (of which the author himself has investigated *Tussilago Farfara*, a few species of *Petasites*, *Liatris elegans* and *Ageratum mexicanum*). Finally, some cytological notes are given and also notes on the phylogeny of the embryo-sac of the angiosperms.—The embryo sac of *Adenostyles albifrons* develops normally into the 8-nucleate stage; later the antipodals multiply. Enlarged cells may be found in the antipodal region. The antipodal region does not invade the surrounding tissues. The embryo-sac of *Adenostyles* is of the same type as those of the Senecioneae but does not resemble those of the Eupatorieae. In *Adenostyles*, *Tussilago* and *Petasites* the chalazal megaspore forms the embryo-sac. The haploid number of chromosomes is 9 in *Liatris elegans*, 10 in *Ageratum mexicanum* and probably 19 in *Adenostyles albifrons*.—*O. Heilborn.*

2635. Longley, A. E. **Polycary, polyspory, and polyploidy in citrus and citrus relatives.** Jour. Washingon [D. C.] Acad. Sci. 15: 347–351. 1925.—Chromosome study was made by the writer in various citrus plants in the hope of throwing light on the origin of this group, and for the benefit of future breeding work. The haploid number was found, with few exceptions, to be 9. Polycary and polyspory were frequently observed, and in 1 species polyploidy was discovered. The importance of the latter condition apparently lies in the "possible opportunity it affords the breeder to obtain hybrids with closely related diploid forms, and thus multiplying the chances of obtaining forms with unusual chromosome complexes."—*Helen M. Gilkey.*

2636. Michaelis, P. **Blütenmorphologische Untersuchungen an den Euphorbiaceen. [Morphological investigations of the flowers of the Euphorbiaceae.]** Bot. Abhandl. 3: 1–150. *41 plates*, 1924.—The aim of this paper is to determine whether the apparently simple flowers of the Euphorbiaceae are primitive or reduced. After a brief review of the floral theories of Goebel, Eichler, Engler, and Pax, the author discusses thoroughly the pseudanthic theory of Wettstein, the euanthic theory of Hallier and Arber-Parkin, and the *dédoublement* theory (chorisis). Representative species of over 100 genera of Euphorbiaceae are described from a morphologic and an ontogenetic viewpoint. Much variation is noted in the structure of the flower, particularly along the following lines: symmetry, numerical proportion, perianth, discs, androecium, gynoecium, and diclinism. The author concludes that all the flowers of the Euphorbiaceae may be derived from forms which are hermaphroditic, actinomorphic, and cyclic, possess calyx and corolla and a many-whorled polyandrous androecium. Diclinism in extant euphorbian flowers has been derived by the reduction of one of the sexes; apetaly by the reduction of the corolla or the calyx. Reduced sepals may take the form of glandular emergences and finally form discs which in the Euphorbiaceae are composed of rudimentary sporophylls, the majority of which are staminodia of various form. Often the central rudimentary sporophyll points to the presence of a gynoecium. The hexamerous condition is due to the "pushing in" of a whorl; flowers with a 1–4-merous plan are derived from pentamerous forms by reduction, which is expressed in a diminution or rearrangement of parts, then coalescence, abortion, and finally, a complete suppression of the organ. The acyclic condition

is derived secondarily by the disarrangement of the symmetrical plan, which is influenced by the growing point. The investigations disclose the probability that nutrition may explain these variations. After subjecting plants to various soil, light, and nutritive conditions, it was concluded that environmental factors cannot offer a satisfactory explanation, since the majority of the plants were influenced to but a slight degree. The conclusions are that the simple types are derived from hermaphroditic flowers by reduction, and that the angiosperm flower has been derived through the Polycarpicae from the Gnetaceae or the Cycadofilicales.—*J. M. Haber.*

2637. Mottier, D. M. **Polyembryony in certain nut-bearing pines.** Proc. Indiana Acad. Sci. 38: 297–298. *Fig. 1.* 1922 [1923].—A case of polyembryony was found in the seed of *Pinus edulis* Engl. Five embryos were recognizable of which only 2 developed cotyledons. Each was half the size of the embryo normally surviving. There is a discussion of the factors concerned in polyembryony.—*Edwin J. Kohl.*

2638. Posthumus, O. **Über Knorripteris Jutieri (Renault) P. Bertrand und Protopitys Buchiana Goeppert, ihre systematische Stellung in Stelärmorphologischer Hinsicht betrachtet.** [**Knorripteris Jutieri and Protopitys Buchiana, their systematic position in relation to stelar morphology.**] Rec. Trav. Bot. Néerlandais 21: 521–526. 1924.—Thus far the study of vascular structures in relation to 3 dimensions in space has been principally carried on with recent Filicales and seed plants. The writer suggests that it would be interesting to use this method also in paleontology. In *Knorripteris Jutieri* the position of the leaves is 8/21. On the leaf-scars 5 collateral bundles are visible. Inward these bundles fuse; the phloem separates and unites laterally with the phloem of neighboring bundles, whereas the xylem approaches the center and unites with other xylem bundles. The bundles are not only seen toward the outside of the pith, but also inside. In *Protopitys* the secondary wood resembles that of conifers. The tracheids possess the characteristic bordered pits. The leaves were alternate, 2-sided on the stem. Protoxylem was not found in the leaf-traces. The secondary wood which is of a special type has thus far not been observed in ferns.—*J. C. Th. Uphof.*

2639. Quéva, C. **Nouvelles observations sur l'anatomie des Equisetum.** [**New observations on the anatomy of Equisetum.**] Bull. Soc. Bot. France 71: 571–576. *Fig. 3.* 1924.—In *Equisetum palustre* the metaxylem differentiates centrifugally.—*C. E. Moore.*

2640. Simpson, Charles Torrey. **Notes on Gongora Galeata.** Jour. Heredity 16: 89–93. *3 illus.* 1925.—A description is given of the remarkably complicated flowers of *Gongora galeata*, accompanied by photographs. The method of fertilization is not clear, but the whole purpose of the complex structure appears to be to insure cross fertilization through the agency of some insect, which must fit the flower exactly.—*Robert Cook.*

2641. Souèges, René. **Developpement de l'embryon chez le Sagina procumbens L.** [**Development of the embryo in Sagina procumbens.**] Bull. Soc. Bot. France 71: 590–614. *Fig. 48.* 1924.—This is a detailed study of the development of the embryo. The basal cell of the embryo at the tetrad stage becomes a haustorial vessel. This occurs in many monocotyledons, and the origin of the Caryophyllaceae and the monocotyledons from a common proangiosperm stock is thus indicated. The many similarities between the development of the embryo in *Chenopodium Bonus-Henricus* and in *Sagina procumbens* favor the maintaining of the alliance of the Centrospermae.—*C. E. Moore.*

2642. Stenar, Helge. **Embryologische und zytologische studien über Limnanthes Douglasii R. Br.** **Embryological and cytological studies on Limnanthes Douglasii.**] Svensk Bot. Tidskr. 19: 133–152. *5 fig.* 1925.—The development of the ovule and the stamens is described and the systematic position of the family Limnanthaceae is discussed. Several potential archesporial cells are found, of which one grows out into the embryo-sac mother-cell and occupies the outer part of the nucellus (nucellus is "tenuinuzellat"). The embryo-sac is of the *Lilium*-type and the antipodals soon degenerate. Some 3-nucleate embryo-sacs were occasionally found. The endosperm is nucleate. In the integument, ramified vascular bundles are found. The pollen walls are formed simultaneously. The haploid chromosome number is 5. No conclusions could be drawn as to systematic relationships.—*O. Heilborn.*

2643. Went, M. F. A. F. C. **Sur la transformation du collenchyme en sclerenchyme chez les Podostemonacées.** [**The transformation of collenchyma into sclerenchyma in the Podostem-**

onaceae.] Rec. Trav. Bot. Néerlandais 21: 513–520. *6 fig.* 1924.—Many cases are already known where collenchyma cells have been transformed into sclerenchymatic fibers. Investigations of Schwenderer, Weiss, Haberlandt and Giltay are discussed. The writer describes his observations from some *Oenone* species collected in Dutch Guiana. The sclerenchyma is formed relatively late, and it was found from a series of sections that it originated from the collenchyma. By microchemical reactions with zinc chloride in iodine, a gradual change in the properties of the walls could be observed.—*J. C. Th. Uphof.*

MORPHOLOGY AND TAXONOMY OF ALGAE

Wm. Randolph Taylor, *Editor*

(See also in this issue Entries 2327, 2628, 2859, 2896, 3043)

2644. Bethge, Hans. **Melosira und ihre Planktonbegleiter. [Melosira and its associates in plankton.]** Pflanzenforschung (Kolkwitz) Hft. 3: 1–80 + 2. *2 pl., 6 fig.* 1925.—The 1st chapter treats of size reduction following cell division. Tables are given showing the range of variation of filaments in various localities and at different periods. The observations do not indicate that a gradual reduction in size follows repeated cell division continuing until the minimum size is reached, after which auxospore formation would reestablish the maximum size. Maxima of frequency for *M. helvetica* are found at diameters of 7μ, 11μ, 15μ, 19μ, which with the average auxospore diameter at 24μ establishes a series of fair regularity. This is probably caused by a series of periods of rapid division, with intervening periods of passivity when divisions are few and size decrease is slight. Auxospore formation takes place but rarely except at periods of special frequency lasting for a few weeks at intervals of 2–5 years. At no time is the percentage sufficient to influence the relative abundance of the larger filaments. The size increase ratio varied from 1.6:1 to 3.2:1, with the average of 2.6:1, and varied in different years from 2.6:1 in 1913 to 3.2:1 in 1920 for Havel and the Elbe in *Melosira helvetica*, while for the Plöner See the average was 3.5:1 from a rather small average size of filament. Data are also given for *M. ambigua* and *M. granulata*. The 4th chapter deals with the systematics of *Melosira* from the standpoint of criteria used in classification and the technique to be employed in preparing the genus for study. Chapter 5 takes up the freshwater species. *Melosira polymorpha* n.sp. is established to contain *M. granulata* Ralfs., *M. distans* Kütz. and *M. italica* Kütz., which are reduced to subspecies. New combinations here include *M. polymorpha* subsp. *granulata* (Ralfs) Bethge, with var. *helvetica* (O.M.), var. *islandica* (O.M.), var. *nyassensis* (O.M.), var. *argus* (O.M.), var. *Goetzeana* (O.M.), var. *pyxis* (O.M.), var. *mbasiensis* (O.M.), var. *Magnusii* (O.M.), and var. *baikalensis* n. var. Under *M. polymorpha* subsp. *italica* (Kütz.) Bethge n. comb. are the following new combinations: var. *subartica* (O.M.), var. *ikapoensis* (O.M.), var. *kondoensis* (O.M.), var. *ambigua* (Grun.), and under *M. distans* (Kütz.) Bethge n. comb. are var. *alpigena* (Grun.), var. *nivalis* (Grun.), var. *lirata* (Ehrenb.), var. *valida* (Grun.), and var. *solida* (Eulenst.). The general ecology of the genus is discussed. The plankton of the Havel for several localities and dates is listed, both for *Melosira* and other plant and animal genera. Its periodicity is summarized for several species, and comparison is made with the Plöner See and the Müggelsee.—*Wm. Randolph Taylor.*

2645. Goor, A. C. J. van. **Contribution à la physiologie des Cyanophycées. Sur les pseudo-vacuoles rouges et leur signification. [Contribution to the physiology of the Cyanophyceae. The red pseudo-vacuoles and their importance.]** Rev. Algologique 2: 19–38. 1925.—The author concludes that these vacuoles do not contain a gas, but a viscous substance, which is lighter than the surrounding material and aids the plankton species in floating, and which is truly red in color, not merely appearing red because of peculiarities of refraction.—*Wm. Randolph Taylor.*

2646. Goor, A. C. J. van. **Über einigen neue und bemerkenswerte Schwebealgen. [New and interesting plankton algae.]** Rec. Trav. Bot. Neerlandais 21: 297–328. *11 fig.* 1924.—The writer describes as new *Chaetoceras diversicurvatum* n. sp., **Monoceraos** n. gen. and *M. isthmiiforme* n. sp., *Botryococcus pusillus* n. sp., *Oocystis submarina* Lagerh. var. *ob-*

longa n. var., *O. exigua* n. sp., *Coelosphaerium pusillum* n. sp., and *Thalassiosira Levanderi* n. sp.—*J. C. Th. Uphof.*

2647. Goor, A. C. J. van. **Zur Charakteristik einiger Melosirineae.** [**The characteristics of some Melosirineae.**] Rec. Trav. Bot. Neerlandais **21**: 329–367. *9 fig.* 1924.—A critical morphological description is given of a number of species of the genera *Lysigonium*, *Gallionella* and *Melosira.*—*J. C. Th. Uphof.*

2648. Hamel, G. **Floridées de France III.** [**Florideae of France. Part 3.**] Rev. Algologique **2**: 39–67. *Fig. 8–11.* 1925.—With a general discussion of morphology and reproduction the author describes and gives keys to the following genera: *Batrachospermum*, *Siridotia*, *Lemanea*, *Audouinella*, *Acrochaetium*, *Chantransia*, *Pseudochantransia*, and *Balbiania.* The following changes in nomenclature are included: *Audouinella Boweri* (Murray & Bart.) n. comb., *Chantransia* (Fries) Siridot to include *Pseudochantransia* Brand.—*Wm. Randolph Taylor.*

2649. Hamel, G. **Quelques Cladophora des côtes françaises. IV.** [**Cladophoras of the French Coast. Part 4.**] Rev. Algologique **2**: 68–71. *Fig. 7.* 1925.—This section includes the group Rupestres, represented by *C. rupestris* (L.) Kütz., and *C. ramosissima* (Drap.) Kütz. —*Wm. Randolph Taylor.*

2650. Kylin, Harald. **The marine red algae in the vicinity of the biological station at Friday Harbor, Wash.** (Lunds. Univ. Årsskrift. N. F. 2, 29[9]). Kungl. Fysiografiska Sällskapets Handl. n.f. **36**[9]: 1–87. *47 fig.* 1925.—This report is based principally on material collected by the author during the summer of 1922. Keys are furnished to the genera and species, but descriptions are supplied only with the newly described types. These include: *Acrochaetium Desmarestiae*, *A. pacificum*, *Thuretellopsis Peggiana*, *Peyssonnelia pacifica*, *Pugetia fragilissima*, *Callophyllis edentata*, *Callocolax fungiformis*, *Rhodymenia stipitata*, *Plocamium tenue*, *Rhodochorton tenue*, *Antithamnion defectum*, *A. glanduliferum*, *Platythamnion pectinatum*, *Callithamnion biseriatum*, *C. acutum*, *Pleonosporium squarrosum*, *Ceramium washingtoniense*, *Nitophyllum mirabile*, *Heterosiphonia densissima*, *H. laxa*, and *Pterosiphonia gracilis.* Also from plants already known, but incorrectly named there are described as new: *Cryptonemia borealis*, *Turnerella pacifica*, *Plocamium pacificum*, *Antithamnion occidentale*, *Platythamnion villosum*, *Griffithsia pacifica*, *Ptilota tenuis*, *Herposiphonia grandis*, and *Odonthalia washingtonensis.* *Aeodes Gardneri* is described as new from material collected by Setchell & Gardner. There are newly recorded from this territory the following: *Goniotrichum elegans*, *G. cornu-cervi*, *Erythrotrichia Bertholdii*, *Erythrocladia irregularis*, *E. subintegra*, *Porphyropsis coccinea*, *Gloiophlea confusa*, *Gelidium cartilagineum*, *Petrocelis franciscana*, *Hildenbrandtia occidentalis*, *Chrysymenia pseudodichotoma*, *Trailiella intricata*, *Rhodochorton penicilliforme*, *R. membranaceum*, *Antithamnion floccosum*, and *Gonimophyllum Skottsbergii.* **Thuretellopsis** n. gen. is described as of the Dumontiaceae. The structure of the carpogenic branch and of the cystocarp is specially discussed and figured in *Thuretellopsis Peggiana*, *Weeksia Fryeana*, *Aeodes Gardneri*, *Cryptonemia borealis*, *Turnerella pacifica*, *Peyssonnelia pacifica*, *Pugetia fragilissima* (with **Pugetia** n. gen. of Gigartinaceae), *Anatheca furcata*, *Antithamnion pacificum*, *A. occidentale*, *A. subulatum*, *Platythamnion villosum*, *P. pectinatum*, *Callithamnion biseriatum*, *Pleonosporium squarrosum*, *Griffithsia pacifica*, and *Nitophyllum mirabile.*—*Wm. Randolph Taylor.*

2651. Miyazaki, Hirozô. **On the development of Gloiopeltis.** Jour. Imp. Fish. Inst. [Japan] **20**: 3–6. *1 pl.* 1924.—In *Gloiopeltis* a large number of shoots are found growing out from 1 scutate disc. Of the 3 species examined, *G. colifornis* has the largest disc, *G. cervicornis* the smallest, while *G. tenax* is a little larger than the latter.—When the carpospore germinates a small, thin, membranaceous, scutate disc is formed. A number of minute prominences arise from its upper surface and give rise to the aerial fronds of which there are nearly 30 in *G. colifornis*, but 2–3 (at most 6–7) in *G. tenax*, and only 1 in *G. cervicornis.*—The germination of the carpospore begins soon after its liberation from the cystocarp in May or June, and the formation of aerial shoots is most abundant in October in *G. colifornis.* The disc thus formed seems to survive until the following year, or still later, when the decay of the aerial shoots takes place.—*Author* (*Courtesy Japanese Jour. Bot.*).

2652. Myers, Margret Esther. **Contributions towards a knowledge of the life-histories**

of the Melanophyceae. Univ. California Publ. Bot. 13: 109–124. *Pl. 8–10.* 1925.—"*Postelsia palmaeformis* of the Lessoniaceae has been observed to have a microscopic gametophyte similar to that observed for members of the Laminariaceae, Alariaceae, and Chordaceae, and the same type of alternation of generation. Although Brandt did not find evidence of male plants and of oogonia in *Macrocystis pyrifera*, which is also one of the Lessoniaceae, they are very easily recognized in cultures of *Postelsia palmaeformis*, which would lead one to look for them in other genera of the same family. The microscopic male and female gametophytes, and the formation of young sporophytes of *Laminaria Sinclairii*, have been studied in culture, and the results confirm in one more case what is expected to be true of all of the members of the Laminariaceae. The gametophytes of both *Laminaria Sinclarii* and *Postelsia palmaeformis* continue to grow even after they have first produced gametes, and continue to produce gametes for at least as long as six months. They are still under observation at the time of writing and are still producing gametes. The gametophytes of *Laminaria Sinclairii* contain many more cells and are much more vigorous under the conditions in which they have been observed than are those of *Postelsia palmaeformis*. This may be due to the culture methods being more favorable to *Laminaria Sinclairii* or it may be due to innate differences in the plants themselves. If the latter is true, there is still the question whether it applies to Lessoniaceae and Laminariaceae as a whole or whether the species in each group vary. The male and female gametophytes of both plants after the first few weeks are easily distinguished from one another by their size, although when the spores first germinate it is impossible to tell which of the plants are male and which female." The author states that so far she has found no evidence of the young sporophytes of either *Laminaria Sinclairii* or *Postelsia palmaeformis* producing zoospores, as reported for *Laminaria saccharina* by Kuckuck and Pascher.—*W. A. Setchell.*

2653. Nienburg, W. **Die Besiedelung des Felsstrandes und der Klippen von Helgoland. II, 3: Die Algenbesiedelung des Felsstrandes und der Klippen von Helgoland.** [**The algal vegetation of the rocky shore and of the cliffs of Helgoland.**] Wiss. Meeresuntersuch., Sec. Helgoland, N. Ser. 15^{19}: 1–15. *2 fig.* 1925.—Because of the greater softness of the stone and the stronger tide flow, channeling of the rocks is greater on the northeast side of the peninsula than on the southwest. This establishes a great difference in habitat for algae on the 2 sides, which is increased by the position of the layers of the rock and the exposure of steep walls to the sun's rays. Further, because of the slope of the rock strata, rain water drains to the northeast, appearing as springs during rainy seasons, and freezing during winter, so that by the leverage of the ice the algae are often forced loose from the rocks. The more slowly growing algae are found on the southwest side, while those that grow quickly and can stand the drying of exposure to the sun are found on the northeast. A band of *Ralfsia verrucosa* characteristic of the southwest side is lacking on the northeast where *Enteromorpha lingulata* is abundant. Below these bands we find on the southwest side a zone of *Fucus platycarpus*, with *F. vesiculosus* just beneath it, but the surf prevents these from growing on the northeast. Natural grottos where Kuckuck discovered *Ectocarpus lucifugus* and *Leptonema lucifugum*, have been walled up and the localities destroyed. Other areas of the coast, showing comparable characters, are described. The term "Abrasionsterasse" is offered for the litoral laid bare by receding tides, but upon which the waves beat at high water, and which may be some hundreds of meters broad. On the southern part of the northeast side the tides roll about cobbles as large as one's head and here the "Abrasionsterasse" is completely bare. An area somewhat more protected, which was comparatively bare in 1921, 1922, 1923, was in 1924 covered with luxuriant *Enteromorpha lingulata* highest up, with *E. compressa* below it, followed by *E. Linza.* A lessening of the currents during this year, with the depositing of considerable sand, accounted for the difference. Where the disturbance is normally light, a growth of *Fucus serratus* is found. When in 1922 extreme cold with an east to southeast wind occurred, the sea water froze in the cracks of the rocks, shattering them and dislodging the *Fucus* which, with the small fragments of rock, was quickly washed away. On such areas it was possible to trace the rate of growth of the re-vegetating plants of *F. vesiculosus* and *F. serratus*, which is discussed and figured for the former. *Porphyra laciniata* appeared also in this new growth. For the greater part of the "Abrasionsterasse" the dominant plant is

Fucus serratus. Protected by it there grow plants ordinarily found only in deeper water, such as *Lithothamnion polymorphum, Cruoria pellita, Petrocelis Hennedyi*, and an abundance of *Ahnfeltia plicata, Chondrus crispus* and *Cladophora rupestris*, as well as epiphytes such as *Elachistea fucicola* and *Cladophora lanosa*. Where the stone is too fragile to afford the *Fucus* permanent attachment it is replaced by *Sphacelaria radicans*, with *Rhodochorton floridulum* and *Enteromorpha compressa*. The flora of the protected channels and pools is listed. On the southwest terrace the green algae play a much greater part in spring than they do at other periods. At this time, as in winter, there are lacking the purely summer plants, *Leathesia* and *Dictyota*. The sublitoral zone is characterized by the Laminarias, especially *L. saccharina, L. digitata* and *L. hyperborea*, appearing in this order in increasing depths, with the first even present in a small form in the tidal pools. Besides the water and light requirement, protection from frosts forces these species to the sublitoral, in spite of the fact that the greatest growth occurs in the winter. The algae of the sand reef are not especially characteristic. *Fucus vesiculosus* and *F. platycarpus* are lacking, but *F. serratus* is sparingly represented. Laminarias are abundant as small individuals. Although the Wittkliff is of mussel-shell lime and the Kreidekliff and the Seehundskliffen are of chalk they have in general the same vegetation, notable for young *Laminaria saccharina* in March and April, overgrown by *Polysiphonia urceolata* in May which makes way for Enteromorphas by July, followed in turn by *Cladostephus spongiosus* in August and September, and becoming ultimately nearly bare during winter. Woodwork, jetties and other artificial constructions modify the vegetation locally throughout the area. The lobster cars have a characteristic vegetation of *Scytosiphon lomentarius* and *Phyllitis fascia*. On the buoys also were found *Polysiphonia elongata, Ceramium* and *Bangia*.—*Wm. Randolph Taylor*.

2654. Phillips, R. W. **On vacuolar pseudopodia in a species of Callithamnion.** Rev. Algologique **2**: 14–18. *3 fig.* 1925.—The plant concerned is probably *C. byssoides* Arnott, though differing in some points. From the peripheral cytoplasm at the ends of the cells there project into the median vacuoles, pseudopodia-like extensions of cytoplasm which exhibit constant movement and flow of granules. Fixing reagents cause the retraction of these structures, but plants may retain their vitality in the laboratory for weeks, and even when mounted for microscopic study will retain their activity for hours.—*Wm. Randolph Taylor*.

2655. Sauvageau, C. **A propos de la recontre du Desmarestia Dudresnayi Lamx. dans le golfe de Gascogne. [The occurrence of Desmarestia Dudresnayi in the Gulf of Gascony.]** Rev. Algologique **2**: 1–13. 1925.—A few specimens of this plant were thrown ashore by gales in December, 1924. A historical and critical survey is made of *D. herbacea* Lamx., *D. Dudresnayi* Lamx. and *D. pinnatinervia* Mont. A revised description (in French) is given of *D. Dudresnayi* Lamx.; and *D. pinnatinervia* Mont., *D. ligulata* var. *ligulata* J. Ag., f. *lata* and *D. Dudresnayi* f. *simplex* Crouan are indicated as synonyms.—*Wm. Randolph Taylor*.

2656. Schussnig, B. **Betrachtungen über das System der niederen Pflanzen. [Observations on the systematics of lower plants.]** Verhandl. Zool.-Bot. Ges. Wien **74/75**: 196–272. 1924–1925.—The author undertakes a critical survey of the entire group of the Thallophytes from the phylogenetic standpoint. The structure of the individual cell is held to be the important feature of a true solution of the problem of the relations of the Protophyta, for the specialization of the cell in the service of the complete higher morphological entity is not as great as it is in the case of the Metaphyta and Metazoa. In the author's presentation of the cell from this viewpoint the features of nuclear processes are of particular importance. There is a fundamental difference between the "monadoid" type of cell in the Flagellates with their direct relatives and the "phycoid" cell of the Algae and Fungi. On the basis of his studies the author divides the cell of the Protophyta into Monadophyta and Blastophyta. His system of classification follows: Series 1; Monadophyta, Class 1, Chrysomonadina, Orders Euchrysomonadales, Coccolithophoridales, Silicoflagellata, Class 2, Heterochloridina, Class 3, Cryptomonadina, Class 4, Dinoflagellata, Orders Desmomonadales, Dinophysidales, Peridiniales, Cystoflagellata, Class 5, Euglenoidina, Class 6, Chloromonadina, Class 7, Phytomonadina, with Orders Volvocales, Tetrasporales p.p., Class 8, Protomonadina, Class 9, Polymastigina, Class 10, Soromonadina, with Orders Myxomonadales, Myxophytales.—Series 2; Bacteriophyta, Class 1, Eubacteria, Class 2, Mycobacteria, Class 3, Trichobacteria, Class 4, Myxobacteria.—Series 3; Cyanophyta, Orders Chamaesiphonales, Chroococcales, Gloeosipho-

nales.—Series 4; Chrysophyta, Class 1, Heterocontae, Class 2, Bacillarieae.—Series 5; Chlorophyta, Class 1, Euchlorophyta, Orders Protococcales, Ulotrichales, Bangiales, Oedogoniales, Conjugatae, Class 2, Siphonophyta, Orders Siphonales, Siphonocladiales, Charales.—Series 6; Phaeophyta, Class 1, Phaeosporeae, Orders Ectocarpales, Cutleriales, Sphacelariales, Tilopteridales, Laminariales, Class 2, Dictyoteae, Class 3, Fucoideae.—Series 7; Rhodophyta, Orders Nemalionales, Gigartinales, Rhodymeniales, Ceramiales, Cryptonemiales.—Series 8; Mycophyta, Class 1, Phytomycetes, Orders Chytridiales, Phytomixales, Monoblepharidales, Zygomycetales, Oomycetales, Saccharomycetales, Class 2; Ascomycetes, Orders Plectascales, Discomycetales, Tuberales, Perisporiales, Exoascales, Pyrenomycetes, Laboulbeniales, Class 3, Basidiomycetes, Orders Auriculariales, Tremellales, Ustilaginales, Uredinales, Gasteromycetales, Hymenomycetales, Exobasidiales, Class 4, Lichenes.—*H. Cammerloher (translated)*.

2657. Setchell, William Albert. **Notes on Microdictyon.** Univ. California Publ. Bot. **13**: 101–107. 1925.—A review of the history of the genus and the species attributed to it, with a discussion of various misinterpretations, is followed by a "provisional key" and diagnoses of the new species, *Microdictyon Palmerii*, *M. Boergesenii*, *M. Okamurai*, and *M. japonicum*, with *M. nigrescens* (Yamada) as a new combination.—*Author*.

2658. Setchell, William Albert, and Nathaniel Lord Gardner. **The marine algae of the Pacific Coast of North America. Part III. Melanophyceae.** Univ. California Publ. Bot. **8**[3]: 383–898. *Pl. 34–107*. 1925.—Part III deals with the Brown Algae or Melanophyceae, the latter name proposed by Stizenberger in 1860 is substituted for the more general Phaeophyceae for reasons of priority. No new species are described, all novelties having been described by the authors in previous papers. A new "series" name, Aplanosporeae, is adopted; 2 new orders are proposed, as follows: Desmarestiales and Chordariales; and the following new families: Leathesiaceae, Algiraceae, Heterochordariaceae, Chnoosporaceae, Coilodesmaceae, Lessoniaceae, and Alariaceae. Myriogloiaceae, established by Kuckuck by implication, is also adopted and the name used for the first time. One new tribe, Cymathaereae, is proposed. These proposals result from an attempt to arrange the species, genera, etc., in a logical sequence and in accordance with the results of recent investigations into reproduction and meristematic development within the group.—*W. A. Setchell*.

2659. Vincent, Victor H. **Les algues marines et leurs emplois agricoles, alimentaires, industriels. [Marine algae and their use in agriculture, as food and in industry.]** *206 p. Illus.* E. Ménez: Quimper, 1924—The 1st part of the text comprises a condensed description of the principal species of marine algae with special reference to those of the French coast, which are of economic importance, their structure and chemical composition. There follows a chapter on the geographical distribution of marine algae, again with special reference to France.—The 2nd division of the work discusses the exploitation of the algal beds. The laws promulgated for the control of the industry are given, with their historical connections. Seasonal and other factors which determine the number of times during a season that the beds may be harvested, and the period during which this may best be performed are discussed. Utilization of the algae for fertilizer after various methods of preparation is reported upon, and results of the addition of various other fertilizers are tabulated for several standard crops. The utilization of algae for the production of iodine is outlined, and tables of annual production are given. Utilization of the calcareous species as a source of lime is discussed, with the indication that for fertilizer the use of living specimens, containing much more organic material and soluble salts, is the most profitable. The utilization of algae as a source of human food is reported as not important in France, but the applications in other countries, especially Japan, are referred to. It is considered that the importance in these countries is due to the medicinal laxative action of the algae rather than to any important proportion of available food that they may contain. For domestic animals, especially horses, a somewhat better situation exists, for there the rockweeds may be used for food to the greater or lesser exclusion of the usual stuffs. The chemical constitution of the more important food types from the standpoint of available carbohydrates, proteins and oils is given. Alcohol production from algae is possible, and the method is outlined, likewise the production of various gums, mucilages and jellies. Utilization of *Zostera* as fertilizer, packing material, paper and other purposes is also included.—*Wm. Randolph Taylor*.

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

Alexander W. Evans, *Editor*

(See also in this issue Entry 2351)

2660. Amann, J. **Mnium arizonicum sp. nova.** Rev. Bryologique **52**: 23–25. 1925.—The new species, proposed under the name *Mnium arizonicum*, is based on material collected by E. B. Bartram in the Santa Catalina Mountains of Arizona. It is allied to *M. serratum* Schrad.—*A. W. Evans.*

2661. Amann, J. **Une mousse européenne à peu près inconnue. [An almost unknown European moss.]** Rev. Bryologique **52**: 25–26. 1925.—The subject of the present note was collected by Edw. Messikommer near Wetzikon, Switzerland. The author was at first disposed to consider it undescribed but finally identified it with *Catharinea spinosa* Warnst., a species previously known from Pomerania. He regards it as a relic of the Ice Age.—*A. W. Evans.*

2662. Anderson, Flora. **Development of sporogenous tissue in the foot of Porella navicularis.** Proc. Indiana Acad. Sci. **38**: 261–262. *Fig. 1.* 1922 [1923].—A young sporophyte of *Porella navicularis* is described in which the sporogenous tissue was markedly increased, the spores and elaters occupying most of the stalk and foot.—*Edwin J. Kohl.*

2663. Andrews, A. Le Roy. [Rev. of: Engler, A. (Editor.) **Die natürlichen Pflanzenfamilien. 10. Band. Musci (Laubmoose) 1. Hälfte.** *2nd ed.* **[The natural families of plants. Vol. 10. Musci, 1st Half.]** Wilhelm Engelmann: Leipzig, 1924.] Bryologist **28**: 35–38. 1925.—[See Bot. Absts. 14, Entries 4437, 4438, 4457, 4459, 4460, 4461, 4462, 5107.] The reviewer's comments refer largely to the pages by Brotherus, which deal with the taxonomy of the Bryales. Although his remarks are mainly commendatory he speaks adversely of the abbreviated bibliography, of the lack of figures illustrating the new genera, and of the tendency to recognize too many genera. He calls attention to the recent progress in the taxonomy of the mosses, due largely to Fleischer's work on tropical species, and shows that Brotherus usually follows Fleischer in his classification. Although this system of classification represents a marked improvement over the older systems, it fails in certain respects, particularly in not going "far enough in demolishing traditional groupings." The Dicranales and Pottiales, for example, as defined by Fleischer, still contain elements "whose relationships are doubtful in the extreme." "Most of the credit," however, "for . . . . breaking down the distinction between Acrocarpi and Pleurocarpi" belongs to Fleischer. Numerous remarks dealing with individual genera and families of mosses are included in the review.—*A. W. Evans.*

2664. Bartram, Edwin B. **Prof. Holzinger's Musci Acrocarpi Boreali-Americani et Europaei.** Bryologist **28**: 68–69. 1925.—The 22nd fascicle of Prof. Holzinger's series, which is here commented upon, includes 4 European species, necessitating a change in the title, 5 species or forms new to the flora of the U. S. A., and 1 Arizona species distributed for the first time. The reviewer calls attention to 2 typographical errors in the labels and lists the 25 species included in the fascicle.—*A. W. Evans.*

2665. Bartram, Edwin B. **Some mosses of Western Mexico, with descriptions of two new species.** Bryologist **28**: 64–67. *Pl. 8.* 1925.—The mosses here reported upon were collected by the author in November, 1924, near Mazatlan, State of Sinaloa, Mexico. Of the 4 species found, *Ephemerum mexicanum* and *Weisia sinaloensis*, both of which are figured, are proposed as new, the *Ephemerum* being compared with *E. papillosum* Aust. The other 2 species, *Fissidens reticulosus* Schimp. and *F. tortilis* Hampe & C. M., are minute members of the genus.—*A. W. Evans.*

2666. Boros, Adám. **Two fossil species of mosses from the diluvial lime tufa of Hungary.** Bryologist **28**: 29–32. *Pl. 3, 1 fig.* 1925.—An earlier paper by the author, dealing with the occurrence of *Didymodon tophaceus* in the lime tufa of Hungary, has been abstracted (see Bot. Absts. 13, Entry 1807). The present paper extends his observations and includes a number of figures illustrating the formation of what are called "Didymodontoliths" through the activity of the moss in question. In 1 case another moss, identified as *Eucladium verticillatum*, was the active agent in the formation of the tufa.—*A. W. Evans.*

2667. Britton, Elizabeth G. **Orthotrichum stellatum Brid.** Bryologist 28: 71–72. 1925.—The author, in 1894, reached the conclusion that *Orthotrichum stellatum* Brid., of 1826, was identical with *O. strangulatum*, as defined by Sullivant. The type specimen of *O. stellatum*, collected by Dennis Cooley over 100 years ago at South Deerfield, Massachusetts, and now belonging to the Botanical Garden at Berlin, fully confirms this conclusion. Since the true *O. strangulatum* Beauv., although dating from 1816, is of uncertain identity, and since this name has been applied to various species, it is suggested that the name *O. stellatum* be definitely used for the North American species in question.—*A. W. Evans.*

2668. Chamberlain, Edward B. **On a new variety of Encalypta vulgaris from New Mexico.** Bryologist 28: 4–6. *Pl. 1.* 1925.—The author proposes var. *lunata* Bartram & Chamberlain as a new variety of *Encalypta vulgaris* (Hedw.) Hoffm. It is based on material collected by E. B. Bartram in Santa Fe Canyon, Santa Fe County, New Mexico, in December, 1922. The plate illustrates the new variety and certain details from the typical form of the species.—*A. W. Evans.*

2669. Dupret, H. **Notes on Drepanocladus.** Bryologist 28: 19–21. *4 fig.* 1924.—The author discusses 2 very variable aquatic forms of *Drepanocladus* from the vicinity of Montreal. The 1st bears the name *D. capillifolius* Warnst. f. *fallax* Ren., while the 2nd is referred to *D. aduncus* group *pseudofluitans* Ren. var. *flexilis* Ren. He calls attention to the various interpretations which these forms have received and emphasizes their distinctive features.—*A. W. Evans.*

2670. Emig, W. H. **Twin eggs in Bryum caespiticium.** Bryologist 27: 94. *Pl. 14.* 1924.—The author notes the occurrence of double eggs and double venter-canal cells in archegonia of *Bryum caespiticium*, his material having been collected in the vicinity of Pittsburgh, Pennsylvania. According to his account about 10% of the plants examined show archegonia of this abnormal type. The fate of the twin eggs, if fertilized, was not determined.—*A. W. Evans.*

2671. Henry, René. **Procédé pour l'obtention rapide de coupes de tiges et de feuilles de mousses.** [Method for rapidly obtaining sections of moss stems and leaves.] Rev. Bryologique 52: 26–27. 1925.—The author recommends that material to be sectioned in elder pith should first be imbedded in collodion.—*A. W. Evans.*

2672. Holzinger, John M. **Andreaea nivalis Baileyi n. var.** Bryologist 27: 90–92. 1924.—The new variety, described under the name *Andreaea nivalis Baileyi*, was based on specimens collected by J. W. Bailey at 2 localities in Washington [State], both at an altitude of 5000 feet.—*A. W. Evans.*

2673. Holzinger, John M. **Dr. Brotherus' treatment of Dicranum.** Bryologist 28: 22. 1925.—The author calls attention to the recent treatment by Brotherus of the old genus *Dicranum*, as exemplified in the Laubmoose Fennoskandias (see Bot. Absts. 13, Entry 7183). The genus is there split up into several genera, and the North American representatives of these are listed in the present paper. One new combination, *Orthodicranum rhabdocarpum* (Sull). Holzinger, is made, based on *Dicranum rhabdocarpum* Sull.—*A. W. Evans.*

2674. Holzinger, John M. **Grimmia crinita Bridel, var. capillata DeNot., in North America.** Bryologist 28: 32. 1925.—The author shows that a moss collected by Coville in the Death Valley, California, should be referred to the above variety and not to *G. plagiopoda longipila* or to *G. Brandegei*, as has previously been done (see Bot. Absts. 11, Entry 4237).—*A. W. Evans.*

2675. Holzinger, John M. **Grimmia poecilostoma (Grimmia Cardoti (Héribaud).** Bryologist 28: 7–8. 1925.—The author discusses the validity of the name *Grimmia poecilostoma* Card. & Sebille, published in 1901. According to H. H. Dixon, a letter from whom is quoted, this name should not be superseded by the name *G. Cardoti* Héribaud, of 1899, since the latter was not adequately published. The species in question has recently been reported from Arizona by Bartram (see Bot. Absts. 13, Entry 5151).—*A. W. Evans.*

2676. Holzinger, John M. **Pottia Randii not a Pottia.** Bryologist 28: 6. 1925.—It is shown that *Pottia Randii* Kennedy, proposed as a new species in 1899, represents a depauperate form of *Desmatodon cernuus*.—*A. W. Evans.*

2677. Holzinger, John M. **Some European mosses unrecorded from North America.** Bryologist 28: 34. 1925.—The following 3 mosses, all new to North America, are reported:

Catharinaea undulata minor (Hedw.) Web. & Mohr, from the vicinity of Tacoma, Washington; *Dicranella humilis* Ruthe, from the vicinity of Marshland, Wisconsin; and *Oligotrichum incurvum* (Huds.) Lindb., from the Olympic Mountains, Washington.—*A. W. Evans.*

2678. Leslie, J. R. **Mosses of Wilson's Promontory.** Victorian Nat. **42**: 116–117. 1925. —From the little-known flora of the humid eastern slopes of Wilson's Promontory in the National Park of Victoria, Australia, 38 mosses are recorded, some determined to genus only. The flora is reported as being especially rich.—*Wm. Randolph Taylor.*

2679. Lid, Johannes. **An account of the Cymbifolia group of the Sphagna of Norway.** Nyt Mag. Naturvidensk. **63**: 224–259. *Fig. 1–14.* 1925.—The present paper represents the 1st part of an extended treatise on Norwegian Sphagna and is based on the study of a long series of specimens. After a short characterization of the *Cymbifolia* group a key is given for the identification of the Norwegian species, and each species is discussed in detail with a full citation of stations. The following species are recognized: *Sphagnum imbricatum* Russ. (*S. Austini* Sulliv.), *S. palustre* L. (*S. cymbifolium* Ehrh.), *S. magellanicum* Brid. (*S. medium* Limpr.), *S. papillosum* Lindb., and *S. centrale* C. Jensen (*S. intermedium* Russ. and *S. subbicolor* Hampe). The figures include leaf-sections and maps; the 1st map shows the 41 sections into which Norway is divided for purposes of plant geographical studies, while the others represent the local Norwegian distribution and the world distribution of each of the Norwegian species. According to the data at hand *S. papillosum* is the most abundant species in Norway, with about 40% of the specimens to its credit, and *S. centrale* the most infrequent, with only 10%.—*A. W. Evans.*

2680. Melin, Elias. **Some information as to the Sphagnum-flora of Kamchatka: Results of the Swedish Kamchatka-Expedition, 1920–1922.** Bryologist **27**: 88–90. 1924.—The specimens upon which the present report is based were collected by E. Hultén and include 14 species. These are listed with full data regarding stations. The species are all widely distributed in the northern parts of Europe, Asia, and North America, and 4 are found also in the Southern Hemisphere.—*A. W. Evans.*

2681. Moxley, E. A. **A bryologist's paradise.** Bryologist **28**: 33. 1925.—The author gives a brief account of a region in Ontario about 27 miles north of Owen Sound and close to the shores of Lake Huron. He found it remarkably rich in mosses and mentions a number of species by name, emphasizing the perfect development of the specimens.—*A. W. Evans.*

2682. Nicholson, Wm. Edw. **Notes on some New Zealand species of Frullania.** Bryologist **28**: 17–19. *Pl. 2.* 1925.—The species here reported upon form part of a collection made in 1874 by S. Berggren. About half a dozen are mentioned by name and the following are proposed as new: *Frullania Berggrenii*, from Otira Gorge, South Island, New Zealand; and *F. reptans* Mitt. var. *integristipula*, from Bay of Islands, North Island. In the new species, which is figured, the perianth is covered with crowded ligulate lamellae.—*A. W. Evans.*

2683. O'Neal, Claude E. **A new station for Discelium nudum.** Bryologist **28**: 34–35. 1925.—The author reports the rare *Discelium nudum* (Dicks.) Brid. from Alum Creek, near Cheshire, Delaware County, Ohio, where he discovered it in March, 1925.—*A. W. Evans.*

2684. Pickett, F. L. **The life history of Ricciocarpus natans.** Bryologist **28**: 1–3. 1925. —The author describes the life history of *Ricciocarpus natans* (L.) Corda, from observations made in Hamilton County, Indiana. According to his account the spores germinate in late summer on the muddy bottom of a pond and the sporelings pass through their earlier stages as terrestrial plants. With the approach of cold weather they become submerged and remain in this condition through the winter. In April and early May the tips of the thalli become loosened, rise to the surface of the water, and multiply rapidly. Soon the sex organs make their appearance, and the sporophytes develop, reaching maturity in the latter part of May. With the disintegration of the thalli in the early summer the spores sink to the bottom. The plant is capable of marked regeneration if injured.—*A. W. Evans.*

2685. Potier de la Varde, R. **Nouvelles observations sur Fissidens Monguilloni Thér. [New observations on Fissidens Monguilloni.]** Rev. Bryologique **52**: 17–20. 1925.—The author's earlier note on *Fissidens Monguilloni* has been abstracted (see Bot. Absts. 12, Entry 585). In the present paper he cites new French localities for the species and describes the

natural conditions under which it grows. He finds it largely restricted to vertical rocks along streams and lists a number of other bryophytes with which it is commonly associated. In a sterile condition it resembles *F. Curnowii* Mitt., and the distinctions between the species are here presented in tabular form.—*A. W. Evans.*

2686. Potier de la Varde, R. **Sur la présence en Auvergne du Rhacomitrium mollissimum Philib. [The presence of Rhacomitrium mollissimum in the Auvergne.]** Rev. Bryologique **52**: 21. 1925.—The author announces the discovery of *R. mollissimum* by the Abbé Frémy at Geze, in the Auvergne region of central France. The species, which seems to be new to France, has usually been interpreted as a variety or subspecies of *R. canescens.*—*A. W. Evans.*

2687. Sebille, R. **Contribution à la flore muscinale du Brésil. Deux espèces nouvelles de la famille des Hookeriacées. [Contribution to the moss flora of Brazil. Two new species of the family Hookeriaceae.]** Rev. Bryologique **52**: 22–23. 1925.—The new species here proposed are *Crossomitrium paulense* Broth. & Sebille and *Lepidopilidium proligerum* Broth. & Sebille, both based on material from the monastery of Maristella, Sao Paulo, Brazil. The *Crossomitrium* is allied to *C. Herminieri* Schimp. and the *Lepidopilidium* to *L. subnitens* Geheeb & Hampe.—*A. W. Evans.*

2688. Williams, R. S. **Orthorrhynchium chilense sp. nov.** Bryologist **27**: 87–88. *Fig. 1–9.* 1924.—The species here proposed as new, under the name *Orthorrhynchium chilense,* represents a genus not previously reported from the Western Hemisphere. The species was based on specimens collected by Bro. Claude-Joseph at Panguipulli, Chile, in 1923, and resembles *O. elegans* (Hook. f. & Wils.) Reichdt. of New Zealand.—*A. W. Evans.*

2689. Williams, R. S. **Pseudoleskea Baileyi Best & Grout.** Bryologist **27**: 92. *Pl. 13.* 1924.—The type material of *Pseudoleskea Baileyi* was sterile, but fruiting specimens have since been found by the discoverer, J. W. Bailey, in the vicinity of the type locality. These are described and figured by the author.—*A. W. Evans.*

2690. Williams, R. S. **Some undescribed mosses from Colombia.** Bryologist **28**: 59–64. *Pl. 7.* 1925.—The species here proposed as new represent a part of a collection of mosses made in 1922 by F. W. Pennell and E. P. Killip in the Department of El Valle, Colombia. They are the following, Williams being the authority for all: *Callicostella colombica, Hookeriopsis Killipii, Lepidopilum permarginatum, Neobryum costatum,* and *Sematophyllum Pennellii.* The 4th species, typifying the new genus **Neobryum,** is figured.—*A. W. Evans.*

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA AND MYXOMYCETES

H. M. Fitzpatrick, *Editor*

J. E. Flynn, *Assistant Editor*

(See also in this issue Entries 2172, 2316, 2544, 2628, 2656, 2776, 2814, 2871, 2882, 2883, 2931)

FUNGI

2691. Anonymous. **Nürnberger Pilzausstellung 1924. [Exhibition of fungi at Nurnberg, 1924.]** Zeitschr. Pilzkunde **4**[1]: 71–72. 1925.

2692. Anonymous. **Schlanker Schirmpilz, Weiden-Seitling, Seideger Scheidenpilz, Wohlriechender Schneckling. [Lepiota gracilenta, Pleurotus salignus, Volvaria bombycina, Limacium agathosmum.]** Zeitschr. Pilzkunde **4**[1]: 68. 1925.—All are said to be edible.—*J. E. Flynn.*

2693. Brock. **Pilzberatungsstelle für den Landkreis Recklingshausen.** Jahresbericht, 1924. **[Mycological Advisory Office for Recklinghausen.** Annual contribution, 1924.] Zeitschr. Pilzkunde **4**[1]: 71. 1925.—A note is given on the abundance of certain of the edible fungi in Recklinghausen in 1924. *Tricholoma stans, Pholiota spectabilis,* and *Hypholoma hydrophilum* are reported as edible.—*J. E. Flynn.*

2694. Burgeff, H. **Über Arten und Artkreuzung in der Gattung Phycomyces Kunze. [Species and hybrids in the genus Phycomyces.]** Flora **118–119**: 40–46. *2 fig.* 1925.—Many forms commonly referred to *P. nitens* do not conform to the first exact description, that of

Van Tieghem and Le Monnier (1873). This species is probably of tropical origin and is associated with oily seeds and fruits. The form usually cultivated does not answer to this description, but is described by Burgeff as *P. Blakesleeanus* n. sp. In it the outgrowths from the suspensors tend to surround the zygospore like bird claws. In crossings of *P. nitens* and *P. Blakesleeanus* the former is dominant.—*A. G. Stokey.*

2695. Curzi, Mario. **Sulla flora micologica delle Marche.** [Mycological flora of Marche.] Atti. Ist. Bot. R. Univ. Pavia Ser. III, 2: 49–115. *Pl. 3.* 1925.—The complete list embraces 483 different fungi representing all groups. *Peroneutypella Montemartinii* n. sp., on *Ailanthus glandulosa, Macrophoma turconii* n. sp., on *Rhododendron, Cytoplea wistariae* n. sp., on *Wistaria sinensis,* and *Cercospora camarae* n. sp. on *Lepidium draba* are described and figured. —*H. M. Fitzpatrick.*

2696. Grigoraki, Léonidas. **Recherches cytologiques et taxonomiques sur les dermatophytes et quelques autres champignons parasites.** [Cytological and taxonomic researches on the dermatophytes and some other parasitic fungi.] Ann. Sci. Nat. Bot. 10 Sér. 7: 165–444. *Pl. 1–28.* 1925.

2697. Güssow, H. T. **Mycological problems in manufacture and construction.** Agric. Gaz. Canada. **10:** 221–227. *Pl. 1–40.* 1923.

2698. Hagiwara, Syôzi. **Un simple Moyen d'isoler le Monascus purpureus de l'Ankâ, etc.** [A simple method of isolating Monascus purpureus.] Rept. Dept. Industry Govt. Res. Inst. Formosa, 5: (1–3). 1924.—The isolation of *Monascus purpureus* Went, used in the making of the drink called "Antyû," "Kattyen" or "Kakkon" in Formosa, is not usually easy. The following medium is recommended. Five grains of rice are placed in 6 cm. of water and sterilized. Then 10 cm. of 26–28% alcohol and 1 or 2 grains of "Anka" are added. At a temperature of 30°–35°C. the Monascus gives a fluffy red growth and is easily isolated.—*Author translated. (Courtesy Japanese Jour. Bot.)*

2699. Hruby, J. **Für Mähren neue Steppenpilze.** [Fungi of the steppes new for Moravia.] Bot. Zeitschr. **74:** 247. 1925.—*Mycenastrum corium* (Guers.) Desv., *Disciseda circumscissa* (B. & C.) Holl., and *Bovista hungarica* Holl. are listed.—*H. Cammerloher (translated).*

2700. Huber. **Zur Geniessbarkeit des Pfeffer-Milchlings.** [The edibility of Lactarius piperatus.] Zeitschr. Pilzkunde 4^4: 69. 1925.—*Lactarius piperatus,* although not poisonous, is said to be bitter and not at all palatable.—*J. E. Flynn.*

2701. Huber, H. **Trametes cinnabarina Jacq.** (Zinnober-Tramete). Zeitschr. Pilzkunde 4^4: 62–63. 1925.

2702. Ijzerman, R. **Over Cenococcum geophilum Fr.** Nederland. Kruidk. Arch. **1924:** 222–227. *1 fig.* 1925.—South of Venlo (Netherlands) the writer found irregular black bodies having the appearance of seed of Ornithogalum which are sub-fossil peridia of *Cenococcum geophilum* Fr.—*J. C. Th. Uphof.*

2703. Jackson, H. S. **The Ustilaginales of Indiana III.** Proc. Indiana Acad. Sci. **38:** 291–292. 1922 [1923].—Notes on species previously recorded and the following list of species new to Indiana are given: *Sorosporium Ellisii* Winter, *S. Everhartii* Ellis & Gall., *Sphacelotheca occidentalis* (Seym.) Clinton, *Ustilago oxaldis* Ellis & Tracy. *Doassansia martianoffiana* (Thuen.) Schroet., *Entyloma serotinum* Schroet., and *Tilletia corona* Schrib.—*Edwin J. Kohl.*

2704. Kirschstein, W. **Ein neuer märkischer Discomycet.** [A new Discomycete from Brandenburg.] Verhand. Bot. Vereins Brandenburg **65:** 122–124. 1923.—*Claussenomyces Jahnianus* W. Kirschst. n. sp., was discovered by the author in 1916. It was at first placed in the genus *Holwaya,* but later studies showed that this plant represents a new genus in the family Bulgariaceae, closely related to the genus, *Bulgaria.*—*H. L. Blomquist.*

2705. Klebahn, H. **Über das Myzel der Peronospora pulveracea Fuckel.** [Studies of the mycelium of P. pulveracea.] Zeitschr. Pflanzenkrankh. 35: 15–22 *15 fig.* 1925.

2706. Knauth, B. **An die Pilzkenner Sachsens!** [To students of fungi in Saxony!] Zeitschr. Pilzkunde 4^2: 32. 1925.—The author invites all students of fungi in Saxony to send him their lists of the localities for the regions they have investigated. The following data will be assembled: Name of organism, habitat, time of collection, common name, edibility, remarks. It is hoped that a Fungus Geography of Saxony may be prepared and published in the Jahresber. Naturw. Gesel. Isis (Dresden).—*Author (translated).*

2707. Knauth, B. **Der filzige Milchling und seine Benennung.** [**Lactarius helvus and its nomenclature.**] Zeitschr. Pilzkunde 4^2: 30–32. 1925.—*Lactarius helvus* Fr. is reported as poisonous. The species is described in detail. As common name in Germany, "filzige Milchling" is preferred to the more common but less definite "Maggipilz."—*From Author (translated.)*

2708. Konrad, P., et A. Maublanc. **Icones selectae fungorum.** [**Figures of selected fungi.**] *16 p. + 500 Pl. with text.* Paul Lechevalier: Paris, 1924.

2709. Krieger, Louis C. C. **Cortinarius cyanites in the United States.** Rhodora **27**: 153–156. *Pl. 151–152.* 1925.—*Cortinarius cyanites* Fr., a bluish mushroom, here recorded from Alstead and Chocorua, New Hampshire, is described and illustrated.—*S. F. Blake.*

2710. Lange, Jakob E. **Studies in the agarics of Denmark. Part IV. Pholiota. Marasmius. Rhodophyllus.** Dansk Bot. Ark. 2^{11}: 1–46. *1 pl.* 1921.—In the 3 preceding parts the genera *Mycena, Amanita, Lepiota, Coprinus, Pluteus, Collybia,* and *Inocybe* are monographed for Denmark. In the present part the same method of treatment is followed. All of the pink-spored agarics with angular spores are included in *Rhodophyllus* Quelet, *Entoloma, Leptonia, Nolanea, Eccilia,* and *Claudopus* being treated as sub-genera. Generic discussions, keys to species, and technical specific descriptions are given throughout. The spores of many species are figured.—*H. M. Fitzpatrick.*

2711. Lange, Jakob E. **Studies in the agarics of Denmark. Part V. Ecological notes. The Hygrophorei. Stropharia and Hypholoma. Supplementary notes to parts I–III.** Dansk. Bot. Ark. **4^1**: 1–58. *2 pl. (1 col.)* 1923.

2712. Lloyd, C. G. **Mycological notes No. 72.** Mycological Writings of C. G. Lloyd **7**: 1269–1300. *Pl. 281–296, fig. 2769–2902.* 1924.—Species are discussed in the genera *Polyporus, Renilla, Polystictus, Daedalea, Fomes, Cyclomyces, Ptychogaster, Hexagona, Trametes, Favolus, Stereum, Merulius, Thelephora, Irpex, Lenzites, Dacryomyces, Cyphella, Lentinus, Phlebia, Tremella, Femsjonia, Auricularia, Exidia, Campanella, Pilacre, Hydnum, Radulum, Secotium, Broomeia, Arcangeliella, Lycoperdon, Mitromyces, Simblum, Bovistella, Hymenogaster, Laternea, Octaviania, Cremeogaster, Lycoperdopsis, Calocera, Geaster, Calvatia, Hydnocystis, Sarcosoma, Xylaria, Otidea, Nummularia, Camillea, Hypoxylon, Bolinia, Hypocrea, Poronia, Holttumia, Septobasidium, Poria, Craterellus, Cordyceps, Glaziella, Isaria, Rhizopogon, Trichocoma (Trichoderma), Durogaster, Cladoderris, Laschia, Geoglossum, Jansia, Phallus, and Schizophyllum.* Many species are figured. Biographical notes on Miss Elsie M. Wakefield are given; and her photograph is included.—*H. M. Fitzpatrick.*

2713. Lloyd, C. G. **Mycological notes No. 73.** Mycological Writings of C. G. Lloyd **7**: 1301–1332. *Pl. 297–312, fig. 2903–3034.* 1924.—Biographical notes and a photograph of Charles Crossland are given. The parentage and ancestry of Persoon are thoroughly discussed in a reprinting of a paper by Len Verwoerd previously published in South Africa. Species are discussed in the genera **Kupsura** n. gen. *Picoa, Hymenogaster, Calvatia, Mitromyces, Rhizopogon, Mesophellia, Scleroderma, Lycoperdon, Geaster, Durosaecum, Endogone, Polysaccum, Poroniopsis, Wynnea, Hypocrella, Hypocrea, Cordyceps, Torrubiella, Isaria, Xylaria, Melanospora, Porodiscus, Stereum, Nummularia, Hypoxylon, Solenoplea, Daldinia, Kretzschmaria, Polystictus, Entonaema, Merulius, Polyporus, Fomes, Naematelia, Amylocarpus, Cyathus, Cyphella, Cytospora, Elaphomyces, Exidia, Geoglossum, Hymenochaete, Gyromitra, Hexagona, Hydnum, Lentinus, Lenzites, Lysurus, Mesophellia, Phallogaster, Phallus, Favolus, Strobilomyces, Solenia,* and *Tremates.* Many species are figured.—*H. M. Fitzpatrick.*

2714. Lloyd, C. G. **Mycological notes No. 74.** Mycological Writings of C. G. Lloyd **7**: 1333–1348. *Pl. 313–328, fig. 3035–3132.* 1925.—Portraits and biographical notes are given of P. A. van der Bijl and A. C. J. Corda. Interesting notes on Lloyd's travels to various American herbaria are given. Announcement is made of the purchase of a 436-acre wildflower and nature preserve near Ithaca, New York. Species in the following genera are discussed: *Hexagona, Polyporus, Polystictus, Fomes, Stereum, Thelephora, Aleurodiscus, Cladoderris, Septobasidium, Hymenochaete, Tremella, Irpex, Lenzites, Hydnum, Calopposis, Calocera, Calopposis, Dacryomitra, Pterula, Heterotextus, Fuligo, Lentinus, Polyplocium, Secotium, Geaster, Glaziella, Hypoxylon, Dacryomyces, Dacryopsis,* and *Merulius.*—*H. M. Fitzpatrick.*

2715. Lloyd, C. G. **Mycological notes No. 75.** Mycological Writings of C. G. Lloyd **7**:

1349–1364. *Pl. 329–344, fig. 3133–3266.* 1925.—Portraits and biographical sketches are given of Carleton Rea and Jos. Velenovsky. Species are discussed in the genera *Xylobotrium, Cordyceps, Hirsutella, Hypoxylon, Nummularia, Xylaria, Hypoxylina, Solenoplea Tuberculariа, Lentinus,* **Nepotatus,** n. gen., *Tuber, Pilacre, Exidia, Cyphella, Calocera, Pterula, Tremella, Cantharellus, Pseudohydnum, Tremellodendron, Irpex, Cytospora, Hydnum, Heterotextus, Ditiola, Hydnochaete, Dacryomyces, Geoglossum, Diploderma, Anthurus, Sebacina, Merulius, Leucangium, Mitromyces, Mesophellia, Auricularia, Cyathus, Grammothele, Tremellodiscus, Nidula, Thelephora,* and *Guepinia.* Many of the species are figured.—*H. M. Fitzpatrick.*

2716. McCormick, Florence A. **Perithecia of Thielavia basicola Zopf in culture and the stimuation of their production by extracts of other fungi.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 269. *539–554. Pl. 37–39, fig. 1–29.* 1925.—A summary of the literature concerning the perithecia commonly assumed to be the perfect stage of *Thielavia basicola,* is given. Cultures of this and *Thielaviopsis basicola* (Berk.) Ferraris were made in many different media and under many conditions. The following conclusions and notations are made: Perithecia of *Thielavia basicola* were secured in artificial culture. It has a tendency to produce perithecia when grown alone, but it is greatly stimulated when grown with *Thielaviopsis basicola.* It is similarly stimulated by *Cladosporium fulvum, Aspergillus unbrosus* and other fungi. The evidence indicates that *Thielavia basicola* is not the ascospore stage of *Thielaviopsis basicola,* although the 2 forms are commonly associated.—*Henry Dorsey.*

2717. McDougall, W. B. **Mushrooms; a handbook of edible and inedible species.** *viii + 151 p. Illus.* Houghton Mifflin Co.: Boston & New York, 1925.

2718. Magrou, Joseph. **Remarques sur les cultures expérimentales de pomme de terre avec endophyte. [Remarks on the experimental culture of potatoes with an endophyte.]** Ann. Sci. Nat. Bot. 10 ser., 6: 285–288. 1924.—The author replies to the criticisms of M. Ducomet (Ann. École Nat. Agric. Grignon 8: 1923–1924) and re-affirms his conclusion that there is a correlation between the presence of an endophytic fungus in roots and stolons and the phenomenon of tuberization in the potato. Experimental evidence bearing on the question is re-stated in greater detail.—*J. E. Flynn.*

2719. Mattirolo, O. **Noterelle di micologia. [Mycological notes.]** Bull. Soc. Bot. Italiana **1925:**[1] 11–19. 1925.—*Myriostoma coliforme,* found before only in Sicily, Piedmont, and Tuscany, is reported from Liguria in the province of Spezia in Corniglia. The spores are tuberculate, not reticulate.—Fries in 1829 erected the genus *Mylitta* on *M. pseudo-acaciae* from dried specimens collected by Chaillet in Switzerland. He placed the genus near *Pachyma.* In 1888 De-Toni transferred the species to *Hysterangium* as *H. pseudo-acaceae* (Fr.) De-Toni. In 1850 Cesati distributed as No. 1540 of the Rabenhorst Herbarium several specimens of *Mylitta* but changed the name to *Mylittaea.* At the suggestion of C. G. Lloyd investigation by Mattirolo of the Cesati specimens in the Cesati Herbarium at the R. University of Rome, has revealed that the genus consists merely of the bacterial nodules on the roots of *Robinia.* —The following fungi collected by E. Festa in Cirenaica are listed:—*Phellorina delestrei* (Du. & Mont.) Fischer, *Pleurotus fuscus* (Battarra) Bresadola, *Terfezia claveryi* Chatin, *Montagnites radiosus* Hollos, *Stereum hirsutum* Fr., and *Trametes gallica* Fries.—From *author (translated).*

2720. Moesz, Gusztáv [von]. **Müggenburgi Schulzer István penészei. [The molds of Stefan Schulzer von Müggenburg.]** Folia Cryptogamica 1^2: 58–59. 1925.—See also the following entry which is an abstract of the same material in German.—*H. M. Fitzpatrick.*

2721. Moesz, G. von. **Die Schimmelpilze St. Schulzer's von Müggenburg. [The molds of Stefan Schulxer von Müggenburg.]** Folia cryptogamica 1^2: 62–63. 1925.—From a study of von Schulzer's manuscripts and such of his illustrations as are extant, the author concludes that: (1) *Ascophora micans* Schulzer and (2) *A. murina* Schulzer are synonymous with *Sporodinia aspergillus* (Scop.) Schroeter; (3) *Eötvösia* Schulzer=*Rhizopus* Ehrenb., and *E. cucurbitae* Schulzer= *R. stolonifer* Ehrenb.; (4) *Haynaldia* Schulzer = *Helicostylum* Cda., *Haynaldia umbrina* Schulzer being *Helicostylum elegans* Cda.; (5) *Hydrophora ascophora* Schulzer = *Mucor mucedo* L.; (6) *Hydrophora brassicae acidae* Schulzer = *Mucor mucedo* L.; (7) *Hydrophora fungicola* Schulzer = *Mucor mucedo* L.; (9) *Mucor Dimicii* Schulzer is *Mucor racemosus*

Fresen.; (8) "*Mucor caninus* Pers.," in Schulzer's works, is *Mucor mucedo*, and (10) "*M. macrocarpus* Cda." is *Spinellus fusiger* (Link) van Tiegh.; (11) *Periconia nigricans* Schulzer = *Rhizopus stolonifer;* (12) "*Pleurocystis Fresenii* Bon., in Schulzer's works, is *Mucor racemosus;* (13) *Pleurocystis Reichardtii* Schulzer = *Mucor racemosus* Fr.; (14) *Reichardtia* Schulzer = *Thamnidium* Link, *R. tripospora* Schulzer being *T. elegans;* (15) *Scitovszkya* Schulzer is *Mucor* Mich., *S. cucurbitae* and *S. panis zeae* Schulzer being *M. racemosus.*—*J. E. Flynn.*

2722. Overeem, C. van. **Beiträge zur Pilzflora von Niederländisch Indien. [Contributions to the fungus flora of the Dutch East Indies.]** Bull. Jard. Bot. Buitenzorg **7**: 423–443. *Pl. 1. Fig. 1–6.* 1925.—The author records his observations on the following fungi: *Basidiobolus ranarum* Eidam, *Helminthosporium Panici* n. sp., *Polyporus udus* Jungh., with a note on the phylogeny of *Ganoderma pseudoferreum* (Wakef.) n. comb.—*Alfred Rehder.*

2723. Overeem, C. van, und J. Weese. **Icones Fungorum Malayensium Abbildungen und Beschreibungen der Malayischen Pilze. Pt. 9–12. Humariaceae, Cercosporaceae, Xylariaceae, Polyporaceae. [Figures and descriptions of Malay fungi.]** Mykol. Mus. Weesp. [Holland] 1925.—[See also Bot. Absts. 14; Entry 1606].

2724. Rolfe, R. T., and F. W. Rolfe. **The romance of the fungus world.** *xx + 309 p. Pl. 1–62, fig. 1–23.* Chapman & Hall: London, 1925.—Chapters: Introduction; fungi in mythology and folk-lore; fungi in fiction; fungi in reality—their structure and characteristics; fungi in reality—their modes of existence; the damage caused by fungi and its effect on mankind, the uses of fungi—in medicine; the uses of fungi—in industry; the uses of fungi—as foods; the cultivated fungi and other fungus foods of commerce; the poisonous fungi; the curious phenomena exhibited by fungi; the study of the fungi as a hobby; some further historical aspects of the fungi; the derivation of fungus names.—This is a new departure among books on fungi, attempting to show what mankind has thought and felt about these plants and also what their relationships (services, injuries, and economic aspects) are to industry, science and human endeavour in general. One of its chief features is the large number of historical and literary references, including extracts from many Greek and Latin writers, and from mediaeval and numerous modern sources, these illustrating practically all aspects of the subject. Each aspect is considered historically and as comprehensively as possible, keeping in mind the object of expounding the human interest of these plants, not only to the amateur and student of mycology, but also to the general reader. Brief outlines are given of the morphology and physiology of the fungi, and the greater part of the book is occupied by a very full account of the fungi in relation to man. The original matter comprises some consideration of their function in Nature's scheme; explanations of the many curious phenomena exhibited by them, for example, rapidity of growth, enormous forces exerted by them, spore dispersal, its results on distribution, etc. Those already familiar with fungi, whether as amateur or professional mycologists, will find much additional information, some of which was previously only available in a very scattered form, or known privately. Thus, very detailed accounts are given of the enormous Japanese mushroom industry, particularly of "shii-take" and "matsu-take" cultivation, the Parisian mushroom industry, and its English developments, notably at Corsham, Wilts; while there is a detailed and critical survey of the philology of the popular names of these plants, for example, "mushroom," "puffball," "toadstool," etc., almost all of which names are involved in much obscurity and have several alternative derivatives. Fermentation, comprising the manufacture of alcoholic liquors and bread-making, is fully considered from the industrial standpoint. The very full part that fungi have played in medicine in the past is fully described, with a more detailed consideration of those in use in modern pharmacology. A comprehensive account of the different classes of poisonous fungi, with treatments and remedies, is also given. Crop diseases, the economic losses occasioned by them, methods of combatting, etc., are amply discussed; as also are those attacking mankind and other animals, and those responsible for "dry-rot" and similar wood diseases. The book thus comprises an anthology of fungus lore, and an encyclopaedia on those aspects of the subject in question. —*R. T. Rolfe.*

2725. Saccardo, P. A. **Sylloge fungorum 23 (Supplementum universale. 10) Basidiomycetae, curante** A. Trotter. *1026 p.* Typis Pergola: Abellini, Italy; R. Friedländer & Sohn: Berlin, 1925. The volume treats all groups of the Basidiomycetes, including the Uredinales and Ustilaginales. A portrait of P. A. Saccardo is inserted.—*H. M. Fitzpatrick.*

2726. Saito, K. **Beschreibung von zwei neuen Hefearten, nebst Bemerkungen über die Sporenbildung bei Torulaspora Delbrücki Lindner. [Descriptions of two new species of yeasts with remarks on the formation of spores in Torulaspora Delbrücki Lindner.]** Bot. Mag. Tokio **37**: 63–66. *2 fig.* 1923.—*Zygosaccharomyces mongolicus* n. sp. and *Torulaspora fermentati* n. sp. are described and illustrated. On the ordinary gypsumblock-culture, *Torulaspora Delbrücki* produces no endospores. It produces, however, endospores readily on the gypsumblock dipped into 18 cc. of 0.5–2 % solution of mannite or glycerin, which contains 2 cc. of 5% solution of K_2HPO_4. Instead of mannite or glycerin, a 0.5% solution of maltose, saccharose or lactose can be used, though the formation of spores is less evident in these solutions.—*T. Fukushi.*

2727. Sartory, A., et Louis Maire. **Compendium Hymenomycetum. Vol. 2, Lepiota.** *P. 1–96. 2 col. pl.* V. Idoux & Cie: Nancy, 1925. [See also Bot. Absts 14, Entry 7295.]

2728. Schinz, Hans. **Der Pilzmarkt der Städte Zürich und Winterthur der Jahre 1922 und 1923 im Lichte der Städtischen Kontrolle. [The fungus market of Zurich and Winterthur in the years 1922–1923 in the light of municipal control.]** Vierteljahrsschr. Naturf. Ges. Zürich **69**: 201–226. *Fig. 2.* 1924.—This is a statistical report of the fungus market of the 2 cities, together with notes as to the effect of weather conditions on the fungus crop, and the appearance of inedible or poisonous species on the market.—*J. E. Flynn.*

2729. Sheppe, W. M. **Torula infection in man.** Amer. Jour. Med. Sci. **167**: 91–108. 1924.—A new and fatal case of torula infection is reported. Autopsy revealed numerous nodules in the lung tissue, and from one of these nodules the organism was isolated. The morphology, staining reactions, cultural characteristics, physiology, and method of reproduction of the fungus are described in detail. These studies establish the fact that the organism is a budding yeast, which does not form ascospores or mycelia, and fails to ferment any of the sugars. It is therefore referred to *Torula*. The organism is also discussed from the medical side, with reference to its mode of entry into the system, the morbid anatomy and clinical manifestations of the infection and the pathogenicity of the disease for animals and man. A method of procedure is suggested for isolation in pure culture. To clarify the nomenclature of yeast infections, the author proposes the recognition of the 3 main types, saccharomycosis, oïdiomycosis and torulosis.—*David McC. De Forest.*

2730. Singer, R. **Pflanzengeographische Beobachtungen an oberbayrischen und oberpfälzischen Hymenomyceten. [Phytogeographic observations on the Hymenomycetes of upper Bavaria and the upper Palatinate.]** Zeitschr. Pilzkunde 4^3: 37–44, 1925.—The article consists of a table of the noteworthy collections of Hymenomycetes in the districts noted in the title. The table includes the following headings: Name, habitat, time, altitude, soil type, vegetation, edibility, distribution, and remarks.—The following are described as new: *Russula maculata* f. *alpina* Sing., *Pluteus cervinus* var. *atromarginatus* Sing.—The following new combinations are given: *Fomes annosus* f. *subpileatus* (Weinm.) Sing.; *F. vegetus* Fr. sensu Ricken var. *applanatus* (Pers.) Sing.; *Clypeus umbrinus* (Bres.) Sing.; *Clypeus relicinus* (Schröt.) Sing.; *Clypeus trechisporus* (Bk). Britz var. *viscosissimus* (Fr.) Sing.; *Clitocybe alpestris* Britz. f. *flavofusca* (Britz.) Sing.—The following are probably new for the region: *Boletus duriusculus* Schulzer; *Hypholoma sublateritium* var. *squamosum* Cke.; *Volvaria Taylori* Bk.; *Collybia radicata* (Relh.) Bk. var. *gracilis* Lange; and *Tricholoma cnista* var. *evenosum* Bres.—*Author (translated).*

2731. Spegazzini, Carlos. **Ficomicetas Argentinas nuevas o criticas. [New or unusual Phycomycetes of Argentina.]** Rev. Argentina Bot. **1**: 87–93. 1925.—Fifteen phycomycetous fungi are discussed, of which the following species are described as new: *Bremia argentinensis* Speg., on *Flaveria Contrayerba; Cystopus solivarum* Speg., on *Soliva anthemidifolia, S. Nasturtiifolia* and *S. sessilis; Hapalocystis? vexans* Speg., on *Capsicum grossum* and *Lycopersicum esculentum; Peronospora andicola* Speg., on *Calceolaria plantaginea; Synchytrium Chaptaliae* Speg., on *Chaptalia integrifolia; S. uliginicola* Speg., on *Elatine minima; Urophlyctis platensis* Speg., on *Trifolium polymorphum;* and *U. vagabunda* Speg., on *Medicago denticulata* and *Adesmia punctata.—George L. Zundel.*

2732. Spegazzini, Carlos. **Uredineae Argentinas nuevas o criticas. [New or unusual rusts of Argentina.]** Rev. Argentina Bot. **1**: 93–145. 1925.—A critical treatment of 133

rusts, of which the following are described as new: *Aecidiolum tulini* Speg. n. f., on *Talinum patens; Aecidium buddleiae* Speg, n. f., on *Buddleia sp.; A. cordiiphilum* Speg. n. f., on *Cordia ulmifolia; A. elongatum* Speg. nom. nov., on *Verbena bonariensis* and *V. litoralis; A. fuchsiicola* Speg. n. f., on *Fuchsia corymbiflora; A. obsoletum* Speg. n. f., on *Conyze serpentaria; A. prosopidicola* Speg. n. f., on *Prosopis algarobilla; A. randiicola* Speg. n. f., on *Randia pubescens; A. seneciophilum* Speg., n. f., on *Senecio bonariensis; A. serjaniae* Speg. n. f., on *Serjania fulta; A.? solaniphilum* Speg. n. f., on *Solanum astero cormum* var. *inermis; Coleosporium catendulae* Speg. n. sp., on *Catendula officinalis; Puccinia anceps* Speg. n. sp., on undetermined species of *Tuneracea; P. Archavaletai* Speg. var. *serjaniae* Speg. n. var., on *Serjania grandiflora; P. calehakina* Speg. n. sp., on *Andropogon contortus; P. colossea* Speg. n. sp.?, on *Baccharis marginalis; P. crotonicola* Speg. n. sp., on *Croton hirtus; P. cyperiphila* Speg. n. sp., on *Cyperus prolixus; P. densissima* Speg. n. sp., on *Metastelma diffusum; P. mendozana* Speg. n. sp., on *Artemisia mendozana; P. rhynchosporicola* Speg. n. sp., on *Rhynchospora stricta; P. stipicida* Speg. n. sp., on *Stipa hystricina; P. stipicola* Speg. n. sp., on *S. cacheutensis; P. uliginiphila* Speg. n. sp., on *Aspilia silphioides; P. uruguayensis* Speg. n. sp., on *Eupatorium Macrocephalum; Ravenelia argentinensis* Speg. n. sp., on *Vachellia lutea* (acacia); *R. lonchocarpicola* Speg. n. sp., on *Lonchocarpus nitidus; Sphaerophragmium? amsothele* (Speg.) n. sp., on *Calliandra Tweedi; Tuberculina umbrina* Speg. n. sp., on *Senecio bonariensis; Uredo bidenticida* Speg. n. f., on *Bidens bipennata, B. pilosa,* and *B. Chrysanthemoides; U. Bonplandi* Speg. n. f., on *Mimosa Bonplandi; U. Caricis phalaroidis* Speg. n. f., on *Carex phalaroides; U. Chloridis, Berroi* Speg. n. f., on *Chloris Berroi; U. imperspicua* Speg. n. f., on *Acacia praecox; U. labatiae* Speg. n. f., on *Labatia glomerata; U. (physopella?) Marchionati* Speg. n. f., on *Robinia viscosa; Uromyces azorellae* Speg. n. sp., on *Azorella caespetosa; U. ingaeiphilus* Speg. n. sp., on *Inga edulis; U. invisus* Speg. n. sp., on *Solanum sisymbriifolium; U. pulverulentus* Speg. n. sp., on *Inga uruguensis;* and *U. tehuelches* Speg. n. sp., on *Alstroemeria patagonica.*—*George L. Zundel.*

2733. Spegazzini, Carlos. **Ustilagineas Argentinas nuevas o criticas.** [**New or unusual Ustilaginales of Argentina.**] Rev. Argentina Bot. **1**: 145–156. 1925.—A critical treatise of 33 members of the Ustilaginales of Argentina, of which the following are described as new species: *Cerebella Annae* Speg., on *Setaria onurus; Cintractia caricetorum* Speg., on *Carex fuscula* and *C. pennsilvanica; Entyloma chilense* Speg., on *Conyza chilensis; E. uliginis* Speg., on *Centumculus minimus; Thecaphora Haumani* Speg., on *Iresine paniculata; Ustilago cariciphila* Speg., on *Carex bonariensis;* and *U. gigantispora* Speg., on *Polygonum acuminatum* var. *subcordata.*—*George L. Zundel.*

2734. Sydow, P., and H. Sydow. **Monographia Uredinearum.** [**Monograph of the Uredinales.**] 4^{3-4}: 353–671. Gebrüder Borntträger: Leipzig, 1924.—With these 2 fascicles the volume is completed. It treats the Uredineae Imperfectae. [See also Bot. Absts. 14, Entry 4511.]—*H. M. Fitzpatrick.*

2735. Thompson, A. **A preliminary note on a Phytophthora associated with a patch canker of Hevea braziliensis in Malaya.** Malayan Agric. Jour. **13**: 145–148. 1925.—A Phytophthora differing notably from *P. faberi* was obtained from a canker of *Hevea.* Details are given of the growth and zoospore formation of the fungus in pure culture, and of successful inoculations.—*R. E. Holttum.*

2736. Tokugawa, Yoshichika, und Yoshikadzu Emoto. **Über einen Kurz nach der letzten Feuersbrunst plotzlich entwickelten Schimmelpilz.** [**A mold which suddenly appeared following the recent fire.**] Japanese Jour. Bot. 2^3: 175–188. *Pl. 10.* 1924.—This is a morphological and physiological study of *Monilia sitophila* (Mont.) Sacc.—*H. M. Fitzpatrick.*

2737. Van Hook, J. M. **The making of genera in fungi.** Proc. Indiana Acad. Sci. **38**: 321–322. 1922 [1923].—This is a discussion on the inconsistencies that occur in generic separations among the fungi. Several instances are cited, for example, *Pleurotus* versus *Claudopus, Hypoxylon* versus *Rosellinia,* and *Phyllosticta* versus *Phoma.*—*Edwin J. Kohl.*

2738. Wollenweber, H. W., C. D. Sherbakoff, and O. A. Reinking; with the cooperation of Helen Johann, and Alice A. Bailey. **Fundamentals for taxonomic studies of Fusarium.** Jour. Agric. Res. **30**: 833–843. *1 fig.* 1925.—The paper is a result of the work of the Fusarium Conference held at Madison, Wisconsin, June to August, 1924, to formulate uniform bases for taxonomy of Fusaria and to study cultures of the fungi brought by Reinking,

mostly from Honduras, which he isolated in connection with his study of banana wilt; by Wollenweber from Europe and by others from the U. S. A. The paper gives a resume of the criteria of norm and of the effect of media, environment and other factors on production of the norm; discussion of the ordinary procedure and some exceptions in identification of the fungi; basis for division into, relationship between, and a dichotomous key to the sections.—Section Moniliforme Sherb. and sub-section Constrictum Wr. are placed together under section Liseola n. nom.; sub-section Spicarioides is raised to the rank of a section under the same name; section Ferruginosum Sherb. is placed as a sub-section of the same name under section Gibbosum; a new sub-section Eugibbosum is formed to include Fusaria of the latter section with brown substratum; and section Martiella is given an extended meaning to include also section Pseudomartiella Wr. The paper gives a list of known Ascomycete connections with Fusaria; a restatement and acceptance of the basis of nomenclature suggested by the Washington Conference of June 6, 1924; and a list of 11 references.—*C. D. Sherbakoff.*

LICHENS

2739. Bachmann, E. **Über Pyknothelizie bei Cladonia.** [**"Pyknotheliza" in Cladonia.**] Ber. Deutsch. Bot. Ges. **41**: 103–107. 1923.

2740. Bioret, G. [Rev. of: Smith, A. L. **A handbook of British lichens.** *158 p. 90 fig.* British Museum: London, 1921.] Rev. Gén. Bot. **36**: 355–556. 1924. [See also Bot. Absts. **11**, Entry 2749.]

2741. Darbishire, O. V. **British Museum (Natural History).** British Antarctic (Terra Nova) Expedition, 1910. Natural History Report. Botany, Part 3: Lichens. *P. 29–76. 2 pl.* British Museum: London, 1923.

2742. Hillman, J. **Übersicht über die in der Provinz Brandenburg bisher beobachteten Flechten.** [**Review of the lichens so far observed in the province of Brandenburg.**] Verhand. Bot. Vereins. Brandenburg **65**: 36–74. 1923.—A list of the lichens found in the province of Brandenburg is given together with the substrata on which they occur; 353 species are listed.—*H. L. Blomquist.*

2743. Macklin, E. D. **Lichens.** South Australian Nat. **6**: 62–65. *3 fig.* 1925.—This is a popular introduction from the ecological standpoint.—*Wm. Randolph Taylor.*

2744. Malme, Gust. O. **Die Collematazeen des Regnellschen Herbars.** [**Collemaceae in the Royal Herbarium.**] Arkiv. Bot. **19**[8]: 1–29. 1924.—The following new species are described: *Collema leptosporum, C. paraguayense, Leptogium megapotamicum, L. vesiculosum* (*Lichen vesiculosus* O. Swartz, *Leptogium bullatum* (Ach.) Mont. var. *vesiculosum*), *L. microcarpum, L. pilcomayense, L. mattogrossense, L. pachycheilum, L. pichneum* (*L. caesium* (Ach.) Wain. var. *pichnea* Ach.) E. Waino, and *L. cyanescens* (Ach.) Koerb. var. *austroamericanum.*—*O. Heilborn.*

2745. Migula, W. **Die Flechten.** [**The lichens.**] Thomé-Migula. Flora von Deutschland, Österreich und der Schweiz **12**: 1–192. *Pl. 42–75.* Hugh Bermuhler: Berlin-Lichterfelde, 1925.—The pages indicated have appeared, but the work is as yet incomplete. The method of treatment corresponds to that of other groups in previous volumes.—*H. M. Fitzpatrick.*

2746. Osterwald, K. **Über die Verbreitung der Krustenflechte Bacidia chlorococca in dem Florengebiet von Berlin.** [**The distribution of the crustose lichen, Bacidia chlorococca, in the flora of the Berlin district.**] Verhand. Bot. Vereins Brandenburg **65**: 75–77. 1923.—This lichen was discovered by the author in this region in the latter part of 1921. Although the region had been thoroughly studied by botanists and lichenologists before this date, the lichen had been overlooked because of its resemblance to the algal covering on plants where it is found. It was found to be abundant and occurred on 6 gymnosperms, 30 broad-leaved plants and sparingly on fences, railings, etc.—*H. L. Blomquist.*

2747. Robbins, C. A. **Cladonia mateocyatha, a new species, and some variations in C. beaumontii.** Rhodora **27**: 49–51. 1925.—*Cladonia mateocyatha,* related to *C. degenerans,* is described from eastern Massachusetts, with a forma *squamulata.* Two forms of *C. beaumontii* (Tuck.) Vainio are described, f. *elegans* and f. *pallida.*—*S. F. Blake.*

BACTERIA

2748. Anonymous. **A bacteriological study of soda water.** Public Health News, New Jersey State Dept. Health, **10:** 228–230. 1925.—Sixty duplicate samples of soda water in the bottles were obtained; one bottle tested for bacteria on agar at 37°C. and *B. coli* and the other allowed to stand at room temperature for a week before testing. As the first set of samples was uniformly low in bacteria, succeeding samples were inoculated (after first having been tested for bacteria) with *B. coli;* allowed to stand 24 hours and then tested for bacteria. About 75 per cent of the samples inoculated failed to show any increase. Chemical determination for acidity (percentage of citric acid), solids, coal tar color, artificial ethers and total carbonic acid were then made. The summary includes (1) gratifyingly low bacterial counts; (2) inhibition of bacterial increase due probably to combination of ingredients, mainly carbon dioxide; (3) only certified coal tar dyes used in 19 samples so examined; (4) 10 samples contained artificial flavoring ethers; (5) soda water standing a week in room temperature, showed no increase in bacteria.—*Arthur P. Miller* (*Pub. Health Engineer. Absts.*)

2749. Almquist, Ernst. **Biologische Forschungen über die Bakterien.** [**Biological investigations on the bacteria.**] *70 p. 7 pl., 9 fig.* P. A. Norstedt & Söner: Stockholm, 1925. —The results of investigations on life cycles, fructifications, variation and mutation of different pathogenic and non-pathogenic bacteria, made by the author and his pupils during 40 years, have been collected and coordinated with similar observations made more recently by other investigators. Numerous new facts have been added, especially in regard to the participation of the bacterial nuclei in the various phases of cell transformation.—*F. Löhnis.*

2750. Bavendamm, Werner. **Die farblosen und roten Schwefelbakterien des Süss- und Salzwassers. Grundlinien zu einer Monographie.** [**The hyaline and red sulphur bacteria of fresh and salt water; bases for a monograph.**] *viii + 156 p.* G. Fischer: Jena, 1924.

2751. Broadhurst, Jean. **Bacteria in relation to man; a study-text in general microbiology.** *xvi + 306 p. 147 illus.* J. B. Lippincott Co.: Philadelphia & London, 1925.

2752. Cauda, A. **Maturazione dei frutti tannici. Ammezimento.** [**Ripening of tannic fruits.**] Nuovo Gior. Bot. Italiano n.s. **32:** 36–49. 1925.—*Bacillus Piri* Cauda, *B. Mali* Cauda, *B. Mespili* Cauda, *B. alcooligenes* Cauda, *Micrococcus Phoenisius* and *Globella Phoenisia* Cauda, and *Micrococcus Rosae* Cauda, are described with cultural and other notes, as the cause of biological maturity of the following fruits, respectively: *Pirus Communis* L., *P. Malus* L., *Mespilus germanica* L., *Ceratonia Siliqua* L., *Phoenix dactylifera* L., and *Rosa sp.*—*P. D. Caldis.*

2753. Conn, H. J. **Biological Stains, A handbook on the nature and uses of the dyes employed in the biological laboratory.** *151 p.* Commission on Standardization of Biological Stains: Geneva, New York, 1925.—This work was prepared in collaboration with J. A. Ambler, S. I. Kornhauser, F. B. Mallory, and L. W. Sharp, members of the executive committee of the commission. The chapter headings are: (1) History of staining. (2) The general nature of dyes and their classification. (3) The spectrophotometric analysis of dyes. (4) Dyes of the nitro, azo, and oxyquinone groups. (5) The quinone-imide dyes. (6) The phenyl methane dyes. (7) The xanthene dyes. (8) Compound dyes. (9) The natural dyes. (10) The theory of staining. (11) Tables relating to stains. (12) Commission specifications of certain stains. (13) Bibliography.—*H. M. Fitzpatrick.*

2754. Gray, Edgerton Charles. **The magnitude of living particles.** Cairo Sci. Jour. **13:** 16–21. 1925.—Comparison of the size of the cell of *Spirochaeta pallida* and the estimated size of a protein molecule leads to the conclusion that the cells of "filter passers" must be composed of a small number of molecules.—*W. Carlton McQuiston.*

2755. Hill, Grace A. **Clostridium multifermentans in chocolate cream candies.** Jour. Bact. **10:** 413–420. *1 pl.* 1925.—The spontaneous breaking of chocolate cream candies was found to be due to an anaerobic organism tentatively classed as *C. multifermentans,* although it may be *C. butyricum.*—*C. E. Skinner.*

2756. Jordan, Edwin O. **A text-book of general bacteriology.** 8th ed. *752 p., 179 fig.* W. B. Saunders Co.: Philadelphia and London, 1925.—"New material has been added on the bacteriophage phenomenon, tularemia, botulism, scarlet fever and other subjects in which recent progress has been made." The chapter on anaerobes has been extensively revised.

"It need hardly be said that within the compass of this work an exhaustive treatment of all sides of bacteriology is impossible. . . . . A general introduction to the subject, however, with some regard for perspective and with emphasis on general rather than on special questions has seemed worth attempting." The main subdivisions of the book follow: Introduction, methods of studying bacteria, structure, mode of development and composition of bacteria, effect of physical and chemical agents upon bacteria, effects produced by bacterial growth, classification of bacteria, bacteria and disease in animal organisms, immunity and body resistance to disease, the staphlococci, the streptococci, the pneumococcus, the meningococcus, the gonococcus, anthrax, diphtheria, colon-typhoid group, hemorrhagic septicemia, *Bacillus pestis*, the hemophilic bacteria, the spore-forming anaerobes, the tubercle bacillus, leprosy, glanders, other pathogenic bacilli, pathogenic spirilla, the spirochetes, the pathogenic trichomycetes, the blastomycetes, the hyphomycetes, the pathogenic protozoa, the filterable viruses, bacteriology of milk and milk products, bacteria and the nitrogen cycle, bacteria in the arts and industries, bacteria of air, soil, and water, and bacterial diseases of plants (in which some 12 representative plant diseases are briefly discussed).—An appendix takes up 16 infectious diseases of doubtful or unknown causation.—(See also Bot. Absts. 12, Entries 3797, 4794).—*Frederick V. Rand.*

2757. Lasseur et Vernier. **Contribution à l'Étude de Bacillus Le Monnieri Lasseur. [Contribution to the study of Bacillus Le Monnieri Lasseur.]** Bull. Soc. Sci. Nancy 4 ser., **2**: 69–135. *Pl. 1–4.* 1924.—The authors isolated from well water a fluorescent bacterium, blue in color. The coloring matter not only impregnates the bacteria but is found also precipitated in the medium as an amorphous or crystalline powder. The organism also produces red, yellow, and violet soluble substances. The reactions of the bacterium on many media are given in detail. Other species which produce a blue pigment were compared with this one, and agglutination studies in rabbit serum were made. The results indicated to the authors the specific identity of their organism and it is named *B. Le Monnieri* Lasseur.—*Lucia McCulloch.*

2758. Nobechi, Keizo. **Contributions to the knowledge of Vibrio cholerae. I. Fermentation of carbohydrates and polyatomic alcohols by Vibrio cholerae.** Jour. Bact. **10**: 197–215. 1925.—Twenty-one selected strains of the *V. cholerae* of different ages and from various sources, behaved entirely alike toward 12 carbohydrates, 4 polyatomic alcohols and 1 glycoside. Subgrouping based on sugar fermentation as used with other species, has not proved to be possible here. Eight non-choleraic spirilla of different ages and from various sources display almost the same reaction towards carbohydrates and polyatomic alcohols as the strains of *V. cholerae*. *V. cholerae* as well as most of the non-choleraic spirilla strains uniformly ferment the carbohydrates and polyatomic alcohols—glucose, levulose, galactose, dextrin, amylum and manitol. They entirely fail to ferment arabinose, xylose, inulin, dulcitol, isodulcitol (rhamnose) and salicin. The various strains decompose, in different degrees, lactose and glycerol. The anomaly of fermentation of the "Koch" strain was proved to be inheritable for 17 months and withstood all reversion experiments. It seems to be a permanent inheritable varied nature. Moreover, this strain has moderate virulence against guinea pigs and gains a distinct virulence increase by animal passage. Such a sucrose non-fermenting strain may perhaps be able to cause an epidemic.—*From Author's Summary.*

2759. Pawan, J. L. **A new medium for the differentiation of B. coli in water analysis.** Ann. Trop. Med. & Parasitology **19**: 319–326. 1925.—After applying the various differential tests the medium described by Koser is credited with giving the most satisfactory results. In the author's tests on *B. coli* from known sources it showed a much higher differential efficiency than did the methyl red or the Voges-Proskaner tests.—*C. T. Butterfield* (*Public Health Engineer. Absts.*).

2760. Popp, Hans. **Die Bakterienflora in den Eikonserven. [Bacterial flora of preserved eggs.]** Zeitschr. Untersuch. Nahrungs- u. Genussmittel **50**: 139–141. 1925.

2761. Schlingman, A. S., and A. W. Haines. **Further cultural characteristics differentiating B. chauvoei from other anaerobes.** Jour. Bact. **10**: 449–458. 1925.

2762. Scott, Joseph P. **Studies on certain characteristics of Clostridium chauvei and Clostridium edematis.** Jour. Bact. **10**: 265–313. 1925.

2763. Society of American Bacteriologists. Committee on Bacteriological Technic. **Manual of methods for pure culture study of bacteria, for use with the descriptive chart of the Society of American Bacteriologists.** *43–48 p.* The Society: Geneva, New York, 1923.

2764. Torrey, John C. **Habitat of B. histolyticus in human intestine.** Jour. Infect. Diseases **36**: 517–524. 1925.—Studies of the presence of *B. histolyticus*, an anaerobic spore-former, in the intestines of humans led to the conclusion that the organism may frequently undergo active multiplication at certain levels of the intestine.—*R. L. Starkey.*

MYXOMYCETES

2765. Brandza, M. **Sur l'apparition des Myxomycetes dans la ville de Bucarest sur des substratums préparés d'avance.** [The appearance of Myxomycetes on prepared substrata in the Bucharest.] Ann. Sci. Univ. Jassy **13**: 93–99. 1924.—The author prepared substrata in 3 places in the public gardens of Bucharest and observed on these substrata, during 1923, 33 species of Myxomycetes. Among the species collected, *Badhamia populina* Lister, *B. utricularis* Berck., *B. rubiginosa* Rost. var. *dictyospora* Lister. *Fuligo septica* Gmel. var. *rufa* Lister, *Fuligo cinerea* Morg., *Comatricha longa* Peck, *C. pulchella* Rost. var. *gracilis* Lister, *Trichia contorta* Rost. var. *inconspicua* Lister and *Oligonema nitens* Rost., are new for the flora of Rumania.—*Al. Borza (translated.)*

2766. Lister, Arthur. **A monograph of the Mycetozoa; a descriptive catalogue of the species in the Herbarium of the British Museum.** 3rd ed. revised by Gulielma Lister. *xxxii + 296 p. 223 pl., 56 fig.* British Museum: London, 1925.

PALEOBOTANY AND EVOLUTIONARY HISTORY

Edward W. Berry, *Editor*

(See also in this issue Entries 2377, 2638, 2666, 3029)

2767. Broekens, D. J. **Über den Stammbaum der Onagraceae.** [The pedigree of the Onagraceae.] Rec. Trav. Bot. Néerlandais **21**: 383–513. *15 fig.* 1924.—The origin and formation of various genera of the Onagraceae are discussed especially in relation to distribution; age and area; size and space; endemic species; application of Willis' rules to some of the larger families belonging to the flora of the Netherlands; the pedigree tree proper; scheme of a pedigree tree of the Onagraceae after the principle of Wallis; comparison of characteristics of the genus *Eplobium* and its division, taking *E. luteum* as the center; distribution of the various species; the presence of sterile pollen as a foundation for relationship; descent of *Oenothera* and some related genera; origin of species by mutation, and accordingly following the ideas of Willis; and the biochronic mutation periods, after de Vries, in relation to age of certain genera. A number of "trees" are given, showing schematically the relationship of a number of species and genera.—*J. C. Th. Uphof.*

2768. Florin, Rudolf. **Zur Kenntnis der paläozoischen Pflanzengattung Dolerophyllum Saporta.** [The Paleozoic genus Dolerophyllum Saporta.] Svensk Bot. Tidskr. **19**: 170–191. *1 pl. 5 fig.* 1925.—*Dolerophyllum Goldenbergii* is described as new. The description is founded on material from the Saar-district. The leaves have numerous, sparingly dichotomously branched nerves and carried hairs, probably only on one side. The epidermis consists of short, polygonal cells among which numerous, more or less parallel rows of stomata are found mostly on one surface but sparingly on the other. The taxonomic position of these leaves is discussed. They show some Cyclopteris-characters, but the epidermis is found to differ from this genus. It is also shown that the leaves can not belong to the genus *Neuropteris*. Finally the author discusses the delimitation of *Dolerophyllum* and its botanical position. According to the author's opinion, leaves should be referred to this genus, that have nerves of a fan-shaped arrangement and an epidermis of a structure similar to that of *D. Goepperti* (Eichw.) Sap. The structure of the epidermis is opposed to any relation to Cordaitales. Again, a relationship to Pteridospermae is not improbable.—*O. Heilborn.*

2769. Grier, N. M. **The fossil flora of the vicinity of Cold Spring Harbor.** Amer. Mid-

land Nat. 9: 513–527. 1925.—This is a classified list of the fossil flora and also Burnham and Latham's list (1914–1924) of insect galls from their Flora of the Town of Southold, Long Island, and Gardiners Island.—*Sister M. Ellen.*

2770. Premik, J., and J. Zablocki. **Zamites gigas Lindley et Hutton var. Feneonis Brongn. sp. z sekwanu górnego okolic Sulejowa nad Pilica.** [Zamites gigas var. feneonis from the upper Sequanian near Sulejow, on the Pilica.] Bull. Serv. Géol. Pologne 3: 129–135. *pl. 6.* 1925.—The authors record this variety of Lindley & Hutton's well known species of the Williamsoniales from the late Jurassic of the locality in Poland named in the title.—*E. W. Berry.*

2771. Regan, C. Tate. **Organic evolution.** Nature 116: 398–401. 1925.—This is from the presidential address to Section D (zoology) of the British Association at Southampton, August 28, (1925). The evolution of species is discussed, using fishes as an illustration. A species is defined as "a community, or a number of related communities, the distinctive morphological characters of which are, in the opinion of a competent systematist, sufficiently definite to entitle it or them to a specific name." A community is considered to be "a number of individuals which live and breed together," distinguished from an "association" of dissimilar organisms which live together.—*O. A. Stevens.*

2772. Scott, D. H. **The transformations of the plant world in geological time.** Nature 116: 645–647. 1925.—This is from an address before the British Association at Southampton, 1925. The following 4 great transformations are recognized and discussed: (1) Marine to land flora, possibly Upper Silurian period; (2) early land to typical Paleozoic, about Middle Devonian; (3) Paleozoic to Mesozoic, Permian to Trias; (4) Mesozoic to modern, Cretaceous.—*O. A. Stevens.*

2773. Sousa, F. L. Pereira de. **Contribuição para o estudo do Carbonico inferior e medio em Portugal.** [Contributions to the study of the lower and middle Carboniferous in Portugal.] Com. Serv. Geol. Portugal 13: 1–11. 1920 [1925].—An account of the Portuguese strata of Dinantian and Moscovian age with citations of fossil plants and comparisons of the beds with the corresponding rocks in Spain.—*E. W Berry.*

PATHOLOGY

Frederick V. Rand, *Editor*

Lillian C. Cash and Harry Braun, *Associate Editors*

(See also in this issue Entries 2156, 2163, 2172, 2181, 2182, 2183, 2190, 2193, 2194, 2205, 2207, 2232, 2241, 2246, 2249, 2259, 2269, 2272, 2278, 2391, 2409, 2418, 2424, 2425, 2434, 2435, 2443, 2445, 2448, 2449, 2450, 2455, 2457, 2459, 2475, 2521, 2523, 2546, 2588, 2589, 2598, 2600, 2602, 2604, 2605, 2606, 2609, 2611, 2612, 2696, 2724, 2729, 2735, 2738, 2749, 2752, 2871, 2882, 2883, 2897, 2942)

DISEASES CAUSED BY FUNGI

2774. Anonymous. **Wart disease.** Scottish Jour. Agric. 7[1]: 72–82. 1924.—Wart disease has not been found in nature except on the potato crop. It was first officially noticed in Hungary in 1896, in Britain in 1898, and appeared in Ireland for the first time in 1908. It is now found in a number of countries. The best method of control is to have disease-free land and immune varieties.—*H. V. Harlan.*

2775. d'Angremond, A. **Verdere Onderzoekingen over bestrijding van veldschimmel (Oidium spec.) in de vorstenlanden.** [Further investigations on control of the tobacco mold (Oidium sp.) in the Vorstenlanden.] (English summary.) Mededeel. Proefsta. Vorstenland. Tabak. 52: 6–23. 1924.—The author in a previous publication pointed out the value of powdered sulphur in controlling *Oidium* in tobacco fields. The quantity used was 360 kg. to 0.7 ha. It was found that the S produced its effects even beyond the given area, indicating that smaller quantities of S might be effective. In the present communication, 62 kg., 124 kg., and 186 kg. per 0.7, ha. were used. From the results obtained, 120 kg. per ha. seemed to be most efficient. This application was found to be most effective before the leaves showed infec-

tion. After 3–6 leaves show infection an application of 186 kg. per ha. has no remedial effect. The experimental plots were so arranged that untreated were alternated with treated areas. Table I brings out the percentage differences between treated and untreated areas. Untreated areas show over 99% infections, whereas some treated areas show 100% healthy plants.—*Cecil Yampolsky.*

2776. Braun, Harry. **Comparative studies of Pythium debaryanum and two related species from geranium.** Jour. Agric. Res. **30**: 1043–1062. *8 pl., 3 fig.* 1925.—Stem rots of Pelargonium cuttings caused by *Pythium debaryanum*, *P. debaryanum* var. *pelargonii*, n. var., and *P. splendens* n. sp., are described, and the comparative morphology and physiology of these organisms and the signs of the disease are detailed.—Inoculation experiments with single-spore cultures and subsequent re-isolations have demonstrated the pathogenicity of these organisms on Pelargonium, Coleus, begonia, cucumber seedlings, and radish seedlings, *P. debaryanum* proving the most pathogenic on the last two.—Cultural characters on 16 media are described. The 3 fungi are readily distinguishable macroscopically.—*From Author's summary.*

2777. Broadfoot, H. **Control of black spot. Venturia inaequalis (Cke.) Aderh.** Agric. Gaz. New South Wales **36**: 747–750. 1925.—The popular description is given of this disease which at times does considerable damage, especially upon apples in N. S. W. Spraying with Bordeaux at time of bud-greening followed by applications of lime-sulphur at pinking and calyx stages is recommended, with later applications of lime-sulphur should atmospheric conditions necessitate.—*L. R. Waldron.*

2778. Campanile, G. **Attacco e diffusione in Italia del Colletotrichum omnivorum Halst. sull'Aspidistra lurida.** [A disease of Aspidistra lurida due to Colletotrichum omnivorum in Italy.] Boll. Mens. Inform. Notiz. R. Staz. Pat. Veg. Roma. **5**: 60–66. *3 fig.* 1924.—The author gives the characteristics of the disease, the etiology of which is similar to that of the disease produced by *Leptosphaeria aspidistrae* Tassi in Italy, by *Ascochyta aspidistrae* in North America and by *Phyllosticta aspidistrae* in Olanda. The diagnosis of this fungus will be completed.—*R. Ciferri (translated).*

2779. Dufrenoy, J. **La maladie de l'encre.** [The ink disease of chestnut.] Ann. l'Office Agric. Regional Sud-Ouest **1925**[10]: (1–20). *Fig. 1–18.* 1925.—The chestnut orchards of the south-west of France and in particular those of the Basque provinces were among the first to suffer the ravages of the ink disease, which in 1882 had spread through the Saar region and then becoming localized, destroyed not only the great chestnut orchards in the Sub-Pyrenean region but started centers of devastation in the south-west of France and especially in the Apennines. The disease is caused by *Blepharospora cambivora*, which exists in the host as sterile mycelium living between the wood and the bark. The fungus lives saprophytically in the dead tissues of the chestnut and in the soil about the trees, where it forms zoosporangia which open and liberate zoospores. The infection starts at the base of the tree and progresses toward the top, but in an extremely irregular manner, owing to differences in resistance of the tissues attacked. The progress of the invasion of the deeper tissues is revealed by the death of the shoots coming out of the trunk—green shoots from a region in which the cambium is still healthy, dry shoots from a region killed by the disease. It may be possible to fight the disease successfully by disinfecting the soil. In Corsica, some trees planted in 1911 in holes into which had been poured a solution of iron sulphate are still healthy, while all the untreated trees are dead. To preserve from infection the chestnut orchards remaining, Petri proposes applying to the soil solutions of copper sulphate or Bordeaux mixture.—*L. C. Cash.*

2780. Fuller, Harrison. **Black stem rust is near defeat.** Seed World **14**[2]: 13–14. 1923.

2781. Gregory, C. T. **Onion smut in Indiana.** Proc. Indiana Acad. Sci. **38**: 318–320. 1922 [1923].—Onion smut control is effected with formaldehyde by the drip method, if the onions are sown at the rate of 5–7 pounds per acre. It is pointed out that when onions are sown at the rate of 60 pounds per acre, the same treatment can not be expected to suffice. Recommendations are given for treatment under the latter conditions, and the factors that might prevent control are discussed.—*Edwin J. Kohl.*

2782. Gregory, C. T. **The present status of hot water treatment in Indiana.** Proc.

Indiana Acad. Sci. 38: 315–318. 1922 [1923].—This is a treatise on the technique of hot water treatment for the control of loose smut of wheat.—*Edwin J. Kohl.*

2783. Hart, H. **Wortelschimmel in djaticulturen.** [A root fungus in teak-plantations.] (English summary.) Tectona 18: 749–754. *Fig. 3.* 1925.—In some districts of Java the dying of young teak trees and of trees of some other species was noticed around the spots where trees of *Ficus elastica* had stood. The same condition is often found when old plantations of *Ficus elastica* are converted to other agricultural crops. The disease is caused by a root fungus.—*Ch. Coster.*

2784. Henry, A. W., and H. C. Gilbert. **Important fungous diseases of the common sunflower.** Minnesota Studies Plant Sci., Studies Biol. Sci. 5: 295–305. *Pl. 32–33.* 1924.—Special mention is made of the destructiveness of Septoria leafspot (*Septoria helianthi*) and downy mildew (*Rhysotheca halstedii*). The effects of 2 other pathogenes, namely, *Puccinia helianthi-mollis* and *Sclerotinia sclerotiorum*, are also discussed briefly. Septoria leaf-spot caused important defoliation of common sunflowers in Minnesota, especially where the crop was grown for several years in succession on the same land. All varieties tested were attacked. The disease was particularly prevalent during early summer and killed a large percentage of the lower leaves. Rust did not become abundant until later in the season and attacked the upper leaves chiefly. Crop rotation, field sanitation, and the destruction of wild hosts are suggested control measures. Downy mildew caused severe stunting of affected plants.—*A. W. Henry.*

2785. Hodgson, Robert W. **Citrus trunk and root disease treatment.** California Cultivator 65: 564, 579. 1925.—Descriptions and treatments are given for brown rot gum disease, gray mold gum disease, scaly bark of the orange and shell bark of the lemon. The importance of an annual tree inspection is emphasized so that control measures may be started in the early stages of the diseases. There are no serious citrus leaf or fruit diseases in California.—*C. S. Pomeroy.*

2786. Hunt, N. Rex, F. G. O'Donnell, and Rush P. Marshall. **Steam and chemical soil disinfection with special reference to potato wart.** Jour. Agric. Res. 31: 301–363. *Pl. 1–2, fig. 1–3.* 1925.—In a study of possible means of exterminating the potato wart organism (*Synchytrium endobioticum* (Schilb.) Perc.) in infected soil, the steam pan was found to be effective although slow, cumbersome and expensive. Of 22 chemicals tried, 14 produced wart-free plots during the season treated and during the 2 following seasons. Six of the successful chemicals (bichloride of mercury, chloride of lime, copper sulphate, sodium carbonate, sodium fluoride, and sulphur) were used dry. Kerosene and crude oil were used undiluted. Water was used with 7 of the chemicals (bichloride of mercury, Bordeaux mixture, cleaning solution, formaldehyde, lime-sulphur, sodium chromate, and a commercial weed killer). The cost of treatment is discussed.—During the period of steaming, heat rapidly penetrates the soil under the steam pan. After the steam is turned off, steam penetrates slowly; hence the shorter the steaming period the longer the time required for the deeper soil to reach maximum temperatures. Treatments necessary to exterminate the organism heat the topmost 8 inches of soil to approximately 100°C. Doubling the steam pressure almost doubles the rate of penetration of heat. A table shows the rise and fall of temperatures at regular intervals for 2 hours or more in soil at different depths following different lengths of treatment with steam at different pressures.—Tests to determine the presence of certain fungicides in soils are given. The penetration of formaldehyde is apparently equal to that of the water carrying it in solution. The penetration of $HgCl_2$ alone in solution is poor, but the addition of NaCl induces good penetration if solutions contain 0.5% $HgCl_2$ + 2½% NaCl. One gallon of $HgCl_2$ + NaCl solution penetrated about 8 inches in Manor loam or in Leonardtown silt loam. The tables show lower penetration in air-dry soil with increasing penetration as the soil moisture increased. The effect of soil moisture on peneration is not the same for all chemicals. For example, $HgCl_2$ + NaCl solution and kerosene showed the same penetration in a soil containing 1.8% of moisture, while in a soil containing 19% of moisture 1 pint of kerosene penetrated as deeply as 1 gallon of $HgCl_2$ + NaCl solution. The penetration obtained by applying 1 gallon of solution was less satisfactory than that obtained by applying the same amount of the chemicals in ½ gallon of solution followed by ½ gallon of water. Minor experiments and a discussion of their practical

applications are given.—The tabulated results show that when heavy chemical treatments are applied to sterilized soil their toxicity and the changes which they may produce in their reaction may be injurious or not, in variable degree. For example, Bordeaux mixture was not injurious to potato plants; plants did not grow in borax-treated soil the 1st year after treatment, but did grow the 2nd and 3rd years; growth in sulphur-treated soil was poorer the 2nd and 3rd years; and no growth in any year occurred in sodium fluoride-treated soil.—*Authors.*

2787. Kendrick, James B. **Phytophthora rot of tomato, eggplant, and pepper.** Proc. Indiana Acad, Sci. **38:** 299–306. *Fig. 2.* 1922 [1923].—This disease occurred in the field at Lafayette, Indiana, in the late summer of 1921. It was found to be due to the same fungus (*Phytophthora terrestris* Sherb.) in all cases. Under field conditions, natural infection of immature, uninjured green tomato fruits occurred. The lesion on eggplant fruits was characterized by a conspicuous light border. Fungus growth is rapid and causes vascular elements to become brown and a premature dropping of the infected fruit. Infected peppers also drop prematurely. The fungus is probably carried in the soil on the roots of young transplants. Maximum development of the fungus takes place at about 30°C. in a humid atmosphere. Tomatoes grown on the same soil in 1922 showed no buckeye rot, probably owing to the lack of sufficient soil moisture.—*Edwin J. Kohl.*

2788. Long, W. H. **When is rot not rot?** Proc. Amer. Wood Preservers' Assoc. **21:** 202–215. 1925.—A preliminary report of some tests on the sterilization of heart-rot in infected ties by pressure treatment with petroleum and creosote. The woods used were Douglas fir, Engelmann spruce and cork-bark fir of 8,000 to 11,500 feet elevation, western yellow pine, white fir, loblolly pine, and longleaf pine. The "fir" treatment (roughly 10 to 12 hours exposure to temperatures about 180°F.) was uniformly successful in sterilizing the ties. The other treatments of Texas yellow pine and western yellow pine of 4 to 5 hours at temperatures of 140° to 180°F. did not sterilize all the ties. In view of the depletion of virgin timber, the question is raised whether the wood with incipient rot not materially weakened cannot be used. —*Walter H. Snell.*

2789. Lutz, L. **Sur la spécificité vis-à-vis de leurs supports des champignons du groupe Pleurotus Eryngii.** [**The specificity as regards their nutrition of the Pleurotus Eryngii group of fungi.**] Compt. Rend. Acad. Sci. Paris **180:** 1044–1047. 1925.—The Pleurotus of Lautaret and *P. Eryngii* were tested on various crucifers. The results showed a complete parallelism between the 2 species, but the latter is the more vigorous. The work confirms the previous findings of the authors as to the existence of antagonistic substances in the host material of wood-inhibiting fungi.—*C. H. Farr.*

2790. Mains, E. B. **Differences in the susceptibility of clover to powdery mildew.** Proc. Indiana Acad. Sci. **38:** 307–313. *Fig. 1.* 1922 [1923]. The fungus seems most likely to be *Erysiphe Polygoni* DC., for no perithecia have been as yet discovered in this section of the U. S. A. A specialization apparently occurs on red clover (*Trifolium pratense*), since crimson clover (*T. incarnatum*), alsike (*T. hybridum*) and white clover (*T. repens*) are not infected. American varieties of red clover are more susceptible than European. Resistant individuals are probably to be found in all varieties. Selection and breeding for resistance offers the best means for controlling the disease.—*Edwin J. Kohl.*

2791. Manuel, H. L. **Downy mildew of the grape.** Agric. Gaz. New South Wales **36: 751–752.** *1 fig.* 1925.—This disease probably reduced the vintage output 40% during the season just closed. The gravity of the disease is pointed out and more universal spraying is urged.—*L. R. Waldron.*

2792. Marsh, R. W. **An Investigation of a sample of diseased seed cotton sent from Nyasaland.** Jour. Textile Inst. **16:** T315-322. *Fig. 6.* 1925.—The sample showed considerable discoloration of the lint, mechanical shattering of the hairs and also internal injury to the seed. The discoloration of the lint is due to the presence of a yellow substance in the lumen which appears to have arisen in the developing hair as a pathological modification of the protoplasmic contents of the hair cell. There is no evident stain in the wall of the hair. Spores of a species of *Nematospora* were found in numbers among the hairs and within the injured seed where mycelium and sporangia of the fungus were also observed. Neither spores nor mycelia proved to be viable. This species is apparently identical with the fungus described

by Nowell (See Bot. Absts. 13, Entry 5328) as "Species C" and said to be one of the causes of lint staining and injury to cotton seed in the West Indies. The injury to the Nyasaland material is provisionally ascribed to this fungus, and it is suggested that the so-called boll-rot of Nyasaland is of the same type as the internal boll disease of the West Indies. A fungus similar to Nowell's "Species C" has been isolated from diseased material from Tanganyika; the fungi differed slightly, however, in habit of growth. A number of other fungi belonging to various genera, together with 2 species of bacteria, have been isolated from the Nyasaland material. A species of *Cephalosporium* isolated has proved, by inoculation experiments, to be capable of reproducing the shattering of the hairs as seen in the original material. The characteristic staining of the hairs was not produced when immature bolls were inoculated with these fungi.—*J. C. Withers.*

2793. Nougaret, R. L. **New fungous disease.** California Cultivator **65**: 102. 1925.—In certain sections a Botrytis disease normally almost unknown in California has been found working parasitically on grapes and has become quite serious, due to prolonged rains and high atmospheric humidity with comparatively low temperatures during May. The variety, Carignane, appears to be most susceptible, with Alicante Bouschet next. Zinfandel shows less susceptibility and Tokay and Thomson Seedless have been slightly affected. The disease was identified by D. S. Milbrath and its symptoms are described by him as follows: "This disease is characterized by a soft rot of the stalks bearing the flowers or young berries. The affected portion of the stalk turns brown and soft. Gradually the affliction travels to the berries, which decay rapidly. Leaves are frequently affected through the formation of small reddish brown spots which may enlarge so that the greater portion of the leaf becomes involved. Frequently brown streaks are found on the main veins of the leaves. When young shoots are affected, the decayed tissue takes the form of a brown soft rot."—Bordeaux mixture, 4–4–50, is suggested as an emergency remedy but it is believed that a change of weather conditions will arrest further development of the disease.—*C. S. Pomeroy.*

2794. Orton, C. R., and Otto Olson. **I. Tobacco resistant to black root-rot in Pennsylvania. II. A method of eliminating experimental error in comparative field tests.** Pennsylvania Agric. Exp. Sta. Bull. 193. *1–15. Pl. 1–4.* 1925.—Four years of testing tobacco selections and varieties for resistance to black root-rot (*Thielavia basicola* Zopf.) has shown that Pennsylvania Seedleaf strains, Olson, Hibshman and Leaman are highly resistant. Olson is the most resistant but is a cigar-binder type, while Hibshman and Leaman are cigar-filler types. Hibshman consistently outyielded all of the selections tested.—Part II is a description of a system of field planting which distributes varieties or selections to be tested so that they are subjected equally to all variable factors.—*H. W. Thurston, Jr.*

2795. Richards, C. Audrey. **The comparative resistance of seventeen species of wood-destroying fungi to sodium fluoride.** Proc. Amer. Wood Preservers' Assoc. **20**: 37–44. *2 pl.* 1924.—The article gives the resistance of several destroyers of standing and structural timber to sodium fluoride, for the purpose of comparing their resistance to that of *Fomes annosus* (the standard fungus for this purpose at the Forest Products Laboratory), and for the purpose of comparison, later on, with the toxicity of zinc chloride. (See following entry).—*Walter H. Snell.*

2796. Richards, C. Audrey. **The comparative resistance of eighteen species of wood-destroying fungi to zinc chloride.** Proc. Amer. Wood Preservers' Assoc. **21**: 18–22. 1925.—This paper gives the toxic concentrations for zinc chloride and also a comparison with the resistance of these same fungi to sodium fluoride. It requires a smaller concentration of zinc chloride than of sodium fluoride to kill some of the fungi and a greater concentration to kill others.—*Walter H. Snell.*

2797. Schmidt, David. **Eradication of common barberry is best black rust prevention.** Seed World **17**[3]: 9. 1924.

2798. Stevens, Neil E. **Notes on blueberry and cranberry diseases.** Amer. Cranberry Growers' Assoc. Proc. Ann. Conv. **55**: 7–11. 1924.—This paper emphasizes the similarity between blueberry and cranberry diseases. Blueberries are just coming under cultivation and they furnish a unique opportunity to study diseases of a native wild plant while it is being brought under cultivation. Thus far, all fungous diseases of blueberry observed are identical

with or closely related to diseases already known on some species of cranberry. Examples are blossom blight caused by *Botrytis*, "witches broom" rust caused by *Calyptospora*, Sclerotinia rot, and a twig blight of blueberries caused by a species of *Phomopsis* which also causes a rot in cranberries. A further study is contemplated to record the progress of these diseases on blueberry.—*C. S. Beckwith.*

2799. Thiel, A. F. **Barberry eradication in Nebraska.** Nebraska Agric. College Extension Circ. 128. *1–16. 9 fig.* 1925.

2800. Walker, J. C., and Carl C. Lindegren. **Further studies on the relation of onion scale pigmentation to disease resistance.** Jour. Agric. Res. 29: 507–514. 1924.—In previous studies with onion smudge (see Bot. Abst. 13, Entry 4521) it was shown that a water-soluble substance in the dry outer scales of colored onion bulbs was decidedly toxic to the causal organism, *Colletotrichum circinans*, while this toxin seems to be absent in the outer scales of white bulbs. The toxin is seemingly effective in this rôle only as it occurs in the dry outer scales whence it dissolves readily into meteoric or soil water. A study was made of the effect of the toxin from pigmented scales upon a number of other bulb parasites: *Botrytis allii* and 2 undescribed species of *Botrytis*, all associated with the neck rot disease; *Fusarium cepae* and an undescribed species of *Fusarium*, both causing Fusarium bulb rot; *Aspergillus niger* causing black mold and *Aspergillus* sp., which attacks the dry outer scales of white bulbs. With one exception the fungi considered were quite as sensitive as the smudge organism to the toxin; *Aspergillus niger* was only slightly affected. A correlation between the presence of pigment and resistance is found only where the parasite is sensitive to the toxins present in colored outer scales and where the organism normally invades through these dry outer scales.—*J. C. Walker.*

2801. Walker, J. C., Carl C. Lindegren, and Freda M. Bachmann. **Further studies on the toxicity of juice extracted from succulent onion scales.** Jour. Agric. Res. 30: 175–187. *Fig. 1–3.* 1925.—In a previous paper (See Bot. Abst. 13, Entry 4521) the senior author has described the toxicity of the juice of crushed onion bulb tissue to the onion smudge organism, *Colletotrichum circinans*, and has suggested that the toxins within the host cell may play a rôle in restricting the parasitism of the invading organism. In the present investigation the studies have been extended to a number of other onion bulb parasites and several allied fungi non-pathogenic to onion. Certain of the properties of the toxins in extracted juice were studied. There is a reduction in viability and vitality of spores of *Botrytis allii* and *Colletotrichum circinans* with the aging of subcultures; and with this reduced vigor is correlated a diminished resistance to the volatile toxins from onion juice. Comparing onion pathogens and non-pathogens no strict correlation was found between pathogenicity upon onion and sensitiveness to the toxins. But to compare the onion pathogens among themselves there is some suggestion of correlation between resistance to the toxins and aggressiveness of attack. *Colletotrichum circinans*, although it is able to penetrate the onion scale cuticle readily, is the most sensitive to the host toxins and is the least aggressive as a parasite. *Aspergillus niger*, though slightly less sensitive to the toxins, is also decidedly limited in its properties as a decay-producing organism. *Botrytis allii*, once establishdd, is one of the most aggressive of the bulb parasites among the least sensitive to the host toxins. It is pointed out that the variation between conditions of experimentation and those in which the fungus hyphae are exposed to the host cell constituents in nature must be considered in interpreting the experimental results; and though it is quite possible that the host toxins may exert an important influence upon the aggressiveness of the pathogen, other important factors are also involved in the complex of parasitism.—*J. C. Walker.*

2802. Wellensiek, S. J. **Infektieproeven met Rhizoctonia en Moniliopsis op tomaat en aardappel. [Inoculation-experiments with Rhizoctonia and Moniliopsis on tomato and potato.]** Tijdschr. Plantenz. 31: 235–250. *Pl. 13–14.* 1925.—Foot-rot of tomato in Holland is caused by *Rhizoctonia Solani* Kühn, as was shown by cross-inoculating potatoes and tomatoes with Rhizoctonia cultures isolated both from potato and from tomato. In growing tomatoes it will therefore be a good procedure not to use soil in which potatoes have been cultivated before. Infection with the tomato Rhizoctonia on potatoes was somewhat heavier than with the one from potato. The difference was not as pronounced in the infections on tomato.

These are considered to be minor physiological differences. By artificially cultivating *Rhizoctonia Solani* for 8 years the virulence was not diminished. Inoculation experiments on potato and tomato with *Moniliopsis Aderholdii* Ruh. gave absolutely negative results; therefore this fungus is not identical with *Rhizoctonia Solani*, as was suggested by Duggar in Missouri and by Simon Thomas in Holland.—*Author.*

2803. W[oolsey], T. S., Jr. **Eradicating canker on silver fir.** [Rev. of: Guinier. **La "Dorge" ou "Chaudron" du sapin. (The canker of silver fir.)** Bull. Trimest. Soc. Forest. Franche-Comte et Belfort **14**: 333–347. *7 fig.* 1922 (See Bot. Absts. 12, Entry 2581).] Jour. Forest. **21**: 76–77. 1923.—The author recommends that the canker due to *Aecidium elatinum* A. & S. so common on silver fir in the Jura and Vosges Mountains of France be prevented by cutting out infected branches and small trees when the stand is in the sapling stage. —*Philip C. Wakeley.*

DISEASES CAUSED BY BACTERIA

2804. Barnum, C. C. **The activities of the red-stripe organism in the soil.** In: **Red-stripe disease studies.** *P. 49–64. Fig. 12–13.* Exp. Sta. Hawaiian Sugar Planters' Assoc: Honolulu, 1925.—Experiments showed that the organism causing red-stripe disease of cane may live in the soils of infected fields for at least 32 days and that during this time there is a definite reduction in the number of bacteria present. The widespread infection of the ratoon fields of Tip cane may be due in part to the presence of bacteria in the soil washed down by rains immediately before harvesting the earlier crop of cane.—*L. C. Cash.*

2805. Barnum, C. C., and J. P. Martin. **The susceptibility of roots, stalks, leaf sheath and leaf blades to red-stripe disease, and the relationship of maturity of tissues to increasing resistance to red-stripe.** In: **Red-stripe disease studies.** *P. 35–48. Fig. 9–11.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—It is clearly shown that the roots of Tip canes are easily inoculated with pure cultures of the red-stripe organism, producing red lesions; from such affected tissues the causal organism has been re-isolated and by etiological and pathological tests on cane leaves proved to be the identical organism introduced into the roots.—It has been shown that the stalks or cane internodes are susceptible to inoculations with the red-stripe organism. The youngest internodes are most susceptible. The ground tissue becomes deep red, the necrotic condition finally resulting in a complete breaking down of the softer interior parts of the cane, with a decidedly putrid odor when the stalk is split open. Greater resistance of older canes and internodes is very apparent, infection in most cases resulting only in definite but restricted red streaks.—The leaf sheath is susceptible to the red-stripe organism when inoculations are made directly into the tissues of the sheath. The young leaves of Tip cane are the most susceptible parts, especially on very thrifty plants. Plants not growing vigorously are often very resistant to the disease. Natural infection of the leaves occurs in the field largely through stomatal entrance of the causal organism. The upper and lower surfaces of the leaves are closely comparable in susceptibility.—*L. C. Cash.*

2806. Burgwitz, G. **Eine durch Bacterium lycopersici n. sp. verursachte Tomatenfruchtfäule. [A tomato rot due to B. lycopersici n. sp.]** Zeitschr. Pflanzenkrankh. **34**: 303–312. 1924.—This is the disease referred to in America as "Blossom end rot." In the greenhouses where it was studied, fruit on the ground developed dark brown spots of various sizes in July and August, usually round to oval in shape. The spotting is limited to the fruits and is never found on other parts of the plant. The originally small, rather soft, dark spot near the pistil spreads rapidly and soon surrounds the entire pistil. With the rotting of the fruit there is a further progress of the spot; the epidermis becomes lighter and sunken, the edges more sharply differentiated, and soon the fruit falls off, the interior being reduced to an evil-smelling liquid. The connection between the arrested development of the spot and the ripening of the fruit is probably explainable by the higher H-ion concentration of the ripe fruit in which the bacteria cannot grow. Cultural characters of the organism involved are given and methods for control are suggested.—*L. C. Cash.*

2807. Cottrell-Dormer, W. **Gumming disease in northern cane.** (Cairns Post) Australian Sugar Jour. **6**: 372. 1925.—It appears that the immediate effect of the gumming disease is a reduction of the sugar content of the cane, with a general physical weakness in

ratoon crops and final extinction. Varieties affected with this disease in the Aloomba area were H. Q. 426 (Clarke's Seedling), H. 109, E. K. 28, E. K. 1, E. K. 2, the Goru's H. Q. 458, Pompey, and D. 1135. The resistant varieties are Badila and B. 147.—*Nellie E. Fealy.*

2808. Cottrell-Dormer, W. **Report by Mr. Cottrell-Dormer [on gumming disease in the Aloomba District].** Australian Sugar Jour. 6: 373-374. 1925.—Because of the prevalence of gumming disease in the Aloomba District the author advises that D. 1135 and H. Q. 426 be discarded in favor of B. 147 on the poorer soils, and that Badila be grown only on the richer lands of the infected area. Q. 813 is a gum-resistant variety but will not stand up to the heavy winds. E. K. 28, H. 109, Pompey, and H. Q. 458 are unsuited for a locality in which the gumming disease prevails, being too prone to infection.—*Nellie E. Fealy.*

2809. Lee, H. A. **Transmission of red-stripe disease by cane cuttings.** In: **Red-stripe disease studies.** *P. 32-35. Fig. 7-8.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—In the experiments made, definite transmission of infection was obtained in one case from a total of 1000 badly diseased cuttings. This small percentage is probably due to the fact that, in the field, infection running down through the central cylinder into the cane very rarely passes beyond a few of the topmost joints.—*L. C. Cash.*

2810. Lee, H. A., and C. C. Barnum. **Cane varieties resistant to bacterial red-stripe disease.** In: **Red-stripe disease studies.** *P. 83-93.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu. 1925.—Inoculations were made with the red-stripe organism on the promising Kohala seedlings selected by the agriculturalists, to test for resistance or susceptibility of these varieties to red-stripe.—*L. C. Cash.*

2811. Lee, H. A., C. C. Barnum, and W. C. Jennings. **Methods of combating red-stripe disease.** In: **Red-stripe disease studies.** *P. 93-99.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—Red-stripe disease is at present confined to the Kohala district and has not been found in the Hamakua or Hilo districts on Hawaii or the other islands. The transportation of cane cuttings from Kohala is inadvisable and is prohibited by territorial quarantine regulations. The laundering or steam cleaning of previously infected clothing will minimize chances of infection by contact with susceptible cane. As the red-stripe is primarily a disease of young cane and is also a wet-weather disease, efforts should be made to get the cane through its susceptible stage during the drier summer weather. Variety tests are being made to compare the yield of resistant Kohala seedlings with the yields of Tip cane.—*L. C. Cash.*

2812. Lee, H. A., and J. P. Martin. **The cause of red-stripe disease of sugar cane.** In: **Red-stripe disease studies.** *P. 1-8. Fig. 1-2.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—The paper presents briefly the isolation and inoculation studies which prove the causal relationship of a bacterial organism with the disease.—*L. C. Cash.*

2813. Lee, H. A., J. P. Martin, and H. A. Purdy. **Diagnostic studies of the organism of red-stripe disease.** In: **Red-stripe disease studies.** *P. 18-24.* Exp. Sta. Hawaiian Sugar Planters Assoc.: Honolulu, 1925.—The article reports the results of further cultural studies with the bacterial organism causing red-stripe disease.—*L. C. Cash.*

2814. Lee, H. A., H. A. Purdy, C. C. Barnum, and J. P. Martin. **A comparison of red-stripe disease with bacterial diseases of sugar cane and other grasses.** In: **Red-stripe disease studies.** *P. 64-74.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—The paper briefly discusses other bacterial diseases of sugar cane, bacterial diseases of grasses and cross inoculations with the red-stripe organism on other grasses. The organism causing red-stripe is briefly described and named as *Phytomonas rubrilineans* n. sp.—*L. C. Cash.*

2815. Lee, H. A., and D. M. Weller. **The histology of red-stripe disease.** In: **Red-stripe disease studies.** *P. 75-82. Fig. 14-21.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—The authors discuss the methods employed in their work, the entrance of the causal organism into the cane-leaf tissues, the tissues of the leaf affected and the effect of bacterial invasion on the tissues.—*L. C. Cash.*

2816. Martin, J. P. **The effect of disinfectants on the organism causing red-stripe of sugar cane.** In: **Red-stripe disease studies.** *P. 25-32.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—The following dilutions of disinfectants are recommended: Phenol, 2.5%; mercuric bichloride, 1 to 10,000; lysol, 1.5%; copper sulphate, 10%; formalin, 10%; 0.2%

solution quicklime; lime-sulphur, 1–50; Uspulun, 0.5%; Dupont fungicide No. 1, 0.2%.—*L. C. Cash.*

2817. Purdy, H. A. **Description of the organism producing bacterial red-stripe disease of sugar cane.** In: **Red-stripe disease studies.** *P. 9–17. Fig. 3–4.* Exp. Sta. Hawaiian Sugar Planters' Assoc.: Honolulu, 1925.—The results of a large number of cultural tests are given in this paper, although the organism is not here named.—*L. C. Cash.*

2818. Smith, Erwin F. **Tumor formation in Bryophyllum.** Jour. Heredity 16: 272. *1 illus.* 1925.—The illustration shows a plant of *Bryophyllum calycinum* inoculated at the base with the hop strain of *Bacterium tumefaciens.* The top of the plant was inoculated with the same strain seven months later. The 2nd tumor developed rapidly, showing that 1 inoculation did not protect from a 2nd inoculation.—*R. C. Cook.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

2819. Altona, T. **Mierenbeschadiging in djaticulturen.** [**Damage to teak plantations by ants.**] [English summary.] Tectona 18: 755–762. 1925.—At some places in Java young trees of *Tectona grandis* were found to be damaged by an ant (*Crematogaster Treubi* var. *vastatrix* Forel.). The damage seems to be remarkable only in special cases; also, other trees than teak are attacked. With teak the young shoots or leaf stalks are punctured and then the pith is dug out, causing the death of the young organs. At another place the death of young teak trees was observed, caused by the attack at the base of the stems by the ant, *Acropyga acutiventris* Roger, living in the soil.—*Ch. Coster.*

2820. Bally, W. **Insterving bij Hevea, veroorzaakt door een wantsenplaag.** [**Dieback in Hevea caused by a bug.**] Resumé in English. (Mededeel. Proefsta. Malang 49.) Arch. Rubbercult. 8^8: (1–9). 1924.—Dieback of Hevea trees in large numbers was apparently caused by the bug, *Dindymus rubiginosus*, found on an isolated estate near Malang.—*Cecil Yampolsky.*

2821. Gemmill, James F. **Wheat bulb disease.** Scottish Jour. Agric. 6^2: 192–196. 1923.—The life history of the fly, *Leptohylemyia coarctata*, is traced with special reference to its effect on wheat. Remedial measures are suggested.—*H. V. Harlan.*

2822. Herrmann. [Rev. of: Reh, L., H. Blunck, K. Friederichs, F. Stellwaag, G. Wilke, und Fr. F. Zacher. **Handbuch der Pflanzenkrankheiten** (Begründet von Paul Sorauer.) Vierter Band. **Tierische Schädlinge an Nutzpflanzen.** Erster Teil. (**Sorauer's Handbook of plant diseases. Vol. 4. Animal enemies of useful plants. Part 1.**) 4th ed. *xvi + 483 p. 218 fig.* Paul Parey: Berlin, 1925.] Deutsch. Forstzeitg. 40: 851. 1925.

2823. Imms, A. D. **A general textbook of entomology including the anatomy, physiology, development and classification of insects.** *x + 698 p., 604 fig.* Methuen & Co.: London, 1925.

2824. Lees, A. H. **Egg-killing washes.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 51–60.* 1924.—Small Paradise apple trees containing eggs of *Aphis pomi* were treated while dormant with various washes to kill the eggs. Lime sulphur at any strength with and without calcium caseinate failed to kill the eggs as did commercial cresylic acid whether used as a spray with soap or with dry carriers as a dust. Tar distillate washes were effective.—*W. H. Chandler.*

2825. Lees, A. H., and L. N. Staniland. **Progress report on red plant of strawberries.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 66–69.* 1924.—Ballard and Peren had reported finding eelworms (*Aphelenchus fragariae*) at the tip of "red plants" and suggested that eelworms cause both red plant and the cauliflower disease. These writers, however, report the finding of many eelworms in the leaf bases of normal plants. They suggest, therefore, that the association of eelworms with "red plant" can not be accepted as conclusive proof that eelworms cause "red plant." More detailed studies are in progress.—*W. H. Chandler.*

2826. Logsdon, R. E. **Dusting of insect infested fields by means of airplanes.** Seed World 17^{13}: 20. 1925.

2827. Sanderson, E. D. **Insect pests of farm, garden and orchard.** 2nd ed. revised and enlarged by L. M. Peairs. *vi. + 707 p. Fig. 1–604.* John Wiley & Son: New York, 1921.—The first general chapters discuss beneficial insects, predaceous and parasitic; structure and development of insects; farm methods for the control of insects; and insecticides, with spray-

ing and dusting apparatus. The insects injurious to various crops are then treated in separate chapters, the form of injury, a brief description of the pest, life history and control being given.—*L. C. Cash.*

2828. Sorauer, P. **Handbuch der Pflanzenkrankheiten.** 4 aufl. neubearb. von L. Reh. Bd. 4. **Tierische Schädlinge an Nutzpflanzen.** Erste Teil. [Handbook of plant diseases.] Revised by L. Reh. Vol. 4. **Injuries due to animals.** Part 1. *xvi + 483 p. 218 fig.* Paul Parey: Berlin, 1925.

2829. Yasukawa, S. **The experiments with the green muscardine fungous on some sugar-cane insects.** Dept. Agric. Govt. Res. Inst., Formosa, Rept. 11. *1–81. 3 pl.* 1924.

INFECTIOUS CHLOROSES (MOSAIC AND PEACH YELLOWS GROUPS, ETC.)

2830. Anonymous. **Leaf roll, mosaic and related diseases of the potato. (Part I.)** Scottish Jour. Agric. 8^1: 44–55. *3 pl.* 1925.—The symptoms and causes of leaf roll of potatoes are discussed. There is a list of resistant and susceptible varieties. The Shamrock group seems to be the most resistant.—Mosaic, crinkle and streak symptoms are also discussed.—*H. V. Harlan.*

2831. Anonymous. **Leaf roll, mosaic and related diseases of the potato. (Part II.)** Scottish Jour. Agric. 8^2: 176–189. *2 pl.* 1925.—A continuation of the discussion of potato diseases, showing the relation of the greenfly to the transmission of disease. Utilization of healthy seed was the most effective control measure. Roguing is effective under certain conditions. Spraying with nicotine sulphate is useful in breeding plats. The mosaic situation is complicated by the combination of diseases which may occur.—*H. V. Harlan.*

2832. Anonymous. **South African Sugar Association. Importation of sugar cane varieties.** South African Sugar Jour. **9**: 455. 1925.—Specimens of Kavangire, Kinar, Oshima, Kassoer, and Toledo varieties of sugar cane, all believed to be new to South Africa, have been received from the U. S. A. by the Experiment Station of the South African Sugar Association. These varieties, which are briefly described, have hitherto been found immune to mosaic disease, which appears to have been introduced into South Africa on canes imported from Argentina in 1914. Other mosaic-immune canes from various parts of the world are to be tested at this Station.—*Nellie E. Fealy.*

2833. Anonymous. **Streak disease on Uba cane in Natal.** Internat. Sugar Jour. **27**: 472–479. *1 pl.* 1925.—The author reviews 2 papers by H. H. Storey which contain "a wealth of detail of field observations and experiments." The transmission phenomena described in the 1st paper clearly indicated an unknown insect vector as the agent which attacked the leaves and that the infection passed down the leaves into the stem and thence upward to the growing point and downward to the stool; and the 2nd paper deals with the insect vector, which had been detected, and the passage of the infective principle to all parts of the plant. This 2nd paper is summarized under the headings: History and present position; symptoms; range of plants affected, including the different varieties of cane, cultivated plants, and wild grasses; effect of the disease on Uba cane; and transmission of the disease.—*Nellie E. Fealy.*

2834. Chiel, The. **Stripe sick cane.** South African Sugar Jour. **9**: 439–440. 1925.—The author believes that stripe disease is the mosaic disease in a modified form as applied to an alleged mosaic-resistant cane. In 1917 Wuthrich stated that unless stripe disease were "exorcised in its early stages" it would be the end of Uba in Natal. Today there is no cane field in Natal or Zululand free from stripe. The disease is unquestionably contagious.—*Nellie E. Fealy.*

2835. Cook, Melville T. **Histology and cytology of sugar cane mosaic.** Jour. Dept. Agric. Porto Rico. **9**: 5–27. *7 pl.* 1925.—This paper gives a review of the studies on the histology and cytology of mosaic and the results of the writer's own studies, which are along the same lines as those of Iwanowski, Palm and Kunkel. He finds the light colored areas to be thinner than the dark green areas but with no perceptible variations in size or shape of cells. The intracellular bodies were rare and inconspicuous, irregular, seldom amoeboid and in most cases in close contact with the nuclei. Th e host nuclei were enlarged and irregular in shape. The chloroplasts in the light areas were reduced in number and size. The abnormalities were more prominent in young than in old leaves.—*Author.*

2836. Doolittle, S. P., and M. N. Walker. **Further studies on the overwintering and dissemination of cucurbit mosaic.** Jour. Agric. Res. 31: 1–58. *Pl. 1–5.* 1925.—Continued investigations of the overwintering of cucurbit mosaic indicate that it does not persist in the soil and is not carried over winter by the striped beetle, *Diabrotica vittata.* Further trials with seed of mosaic cucumber, squash, pumpkin and muskmelon plants have shown that mosaic is rarely, if ever, carried in the seed of these hosts. In the case of the wild cucumber, *Micrampelis* (*Echinocystis*) *lobata*, however, it has been found that mosaic is carried in a certain percentage of the seed from mosaic plants. This host is an important source of infection to cultivated cucurbits in Wisconsin and Illinois, the disease being carried from the wild host by the striped and 12-spotted beetles, *D. vittata* and *D. 12-punctata*, and the melon aphis, *Aphis gossypii.* The striped beetle, however, is the chief agency in the transmission of the disease to cultivated cucurbits. Field experiments indicate that this insect may carry infection over a distance of 400 yards. The milkweed, *Asclepias syriaca*, is susceptible to cucurbit mosaic and is important as a source of infection to the cucurbits. The disease lives over winter in the roots of mosaic milkweeds and the cucumber aphis acts as the carrier of the disease in the spring. Observations indicate that most mosaic milkweeds occur close to cucumber plantings or on land that has grown cucurbits and it is probable that these plants are originally infected from adjacent mosaic cucurbits. In many localities the milkweed is a more important source of infection than the wild cucumber owing to the occurrence of mosaic plants in the immediate vicinity of the fields. The pokeweed, *Phytolacca decandra*, is susceptible to cucurbit mosaic and the mosaic found on pokeweeds in the field is transmissible to the cucurbits by the melon aphis. As in the case of the milkweed, the roots of mosaic pokeweeds produce mosaic shoots each year. The pokeweed appears to be a common source of infection to cucurbits in Michigan, Indiana and southern Illinois, where mosaic plants are abundant about the fields. Cucurbit mosaic also is carried overwinter by the catnip, *Nepeta cataria*, and by certain perennial species of *Physalis.* The latter host appears to be of importance in certain sections in Wisconsin. In cross inoculation experiments with cucurbit mosaic it has been found that 11 genera of the Cucurbitaceae, including 23 species and 96 horticultural varieties are susceptible to the disease. All the cucurbits tested have proved susceptible with the exception of those in the genus *Citrullus*, where only one out of 21 varieties developed the disease. The pepper, *Capsicum annuum*, pigweed, *Amaranthus retroflexus*, and *Martynia louisiana* are susceptible to cucurbit mosaic but are not concerned in its overwintering, being annuals. Trials have been made with seed from mosaic plants of all the susceptible hosts outside the Cucurbitaceae but there has been no evidence of seed transmission of the disease. It has been found that pepper plants may be infected with cucurbit mosaic and the disease then transmitted from such plants to either cucumber or tobacco. Similar results were obtained with pepper plants infected with tobacco mosaic and the results indicate that tobacco and cucumber mosaic are intertransmissible. Experiments on the control of cucurbit mosaic by the removal of the hosts on which it overwinters are in progress.—*S. P. Doolittle.*

2837. Osborn, E. H. **Northern field assistant's report.** [Bundaberg Mail, June 8.] Australian Sugar Jour. 17: 215–216. 1925.—In several places B. 208 cane was affected with mosaic disease and severely affected with leaf stripe. Mosaic disease was also seen on H. Q. 426, near where corn was grown, and in a few stools of Rappoe, and leaf stripe on H. 146, H. 227, Rappoe, Pompey, and Imperial. Cane varieties which did well were E. K. 28, which showed fair stools of thick, heavy, erect canes up to 9–10 feet in length and which stood up well under irrigation methods; H. Q. 458 and Q. 903, which gave good density returns when cut about October; Q. 813, which did well upon the poorer soils; and Badila which in some cases produced 50 tons per acre. Local growers are advised to discard B. 208 and Imperial and to substitute varieties more resistant to disease, such as Goru, Q. 813, E. K. 28, Badila, etc.—*Nellie E. Fealy.*

PARASITIC PHANEROGAMS

2838. Anonymous. **Economic plants of South Africa. Notes from the National Herbarium and Museum. III. Melasma, a root parasite on peanuts.** Jour. Dept. Agric. Union South Africa 9: 448–450. *1 fig.* 1924.—It has been found that certain species of *Melasma* (Scrophulariaceae) are parasitic on the roots of peanuts, with serious consequences to the

host.—*Melasma* (*Alectra vogelli*) is a native of tropical Africa but is also found in northern Transvaal. It has been reported as parasitic on peanuts, cowpeas and beans. The only practicable method of effectually dealing with the parasite is by hand hoeing.—A short description is given of *M. Orobanchoides, M. sessiliflorum, and M. indicum.—L. I. Goldblatt.*

2839. Degen, A. v. **Report of the Dodder Committee.** Rept. Fourth International Seed Testing Congress **1924**: 55–57. 1925.—This is a report of the committee appointed at the Copenhagen Congress to study the problem and to determine, at least approximately and for Europe, the bounds within which the dodder plant produces its noxious effects, distinguishing, so far as possible the scope of the so-called large seeded dodder and that of the common dodder. According to the author, experience has taught that certain parts of Europe, that is, the northern regions and such parts as are situated at a greater height above the sea level, are quite or almost immune against dodder infestation; when introduced into these parts, the plant fails to become acclimatized and disappears after a brief period. On the other hand, there are certain regions in Europe where acclimatization of the dodder is possible, but is neither constant or certain; regions in which the plant may or may not develop and produce ripe seed, according as the weather during the period of vegetation is dry and warm, or cool and wet; and therefore, regions which under certain circumstances could become infected. It was clear from the outset that climatic influences are of primary importance. Methods of cultivation vary in the different countries, and also have an influence upon the propagation of dodder. Since eradication often involves great expense the different countries have made regulations aimed to prevent the importation of seed infested with dodder. The committee reports that in the isohyete of 1,000 m. there is a line of great importance, since it denotes, in all probability, a boundary line for dodder growth; also, another boundary line is the isohypse of 800 m., which without a doubt is connected with the climatic conditions prevailing at this height. It is pointed out that at this boundary line or region, although large quantities of dodder-infested red clover seed were planted, the resulting crop of clover seed was relatively free from dodder. The committee closes its report with the following proposals: "(1) The Congress shall renew the appointment of the dodder committee; (2) in the first place the committee shall be recommended to undertake further investigation of the above mentioned climatic lines, the isohyetes, isohypses, and, so far as possible, also the isothers; and (3) the committee should also be recommended to approach the question of the limit of dodder havoc from the experimental side."—*M. T. Munn.*

NON-PARASITIC DISEASES

2840. Leiningen. [Wilhelm.] [Rev. of: Wille, F. **Die Rauchschadenfrage der Aluminium fabriken.** (**Damage by fumes from aluminum works.**) *66 p., 4 fig.* Paul Parey: Berlin, 1922.] Centralbl. Gesam. Forstw. **49**: 261–262. 1923.

2841. Peyronel, B. **Sopra un caso di nanismo e di deperimento del lupino in seguito a concimazione con calciocianamide.** [**A case of dwarfing and injury to the lupine following treatment with calcium cyanamide.**] Boll. Mens. Inform. Notiz. R. Stazion. Patol. Veg. Roma **5**: 20–26. 1924.—Incorporating calcium cyanamide in the earth at the same time as the seed caused lupines to grow stunted and rachitic, and to lose their leaves except for an apical cluster. This result may be explained by the fact that the lupine is an acid-loving plant, while calcium cyanamide is relatively rather alkaline. *Thielavia basicola*, a species of *Rhizoctonia* and other fungi present in the root tissues of diseased plants, may be found also in the healthy plants and can not be considered primary causes of the disease.—*R. Ciferri* (*translated*).

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

2842. Dodds, H. H. **South African Sugar Association. Report of the Director of Experiment Station for July and August, 1925.** South African Sugar Jour. **9**: 545–549. 1925.—In Java, yellow stripe is used as a synonym for mosaic and is quite distinct from streak as known in Natal. Uba cane as it is known in Natal is entirely immune to mosaic. In the case of streak, cane planted from healthy cuttings shows great superiority over cane planted from cuttings of infected plants, the difference being particularly noticeable in irrigated plots. Doubtless drought intensifies the evil effect of this disease by making greater demands on the

leaf surface, part of which is inactivated by the disease; and besides, the streak-infected plants are deficient in the finer, hair-like roots so numerous in healthy plants.—In the experiments to find a green manure crop adapted to the unfavorable period of the year it was found that buckwheat gave good results generally, rape gave good results in some cases in the heavier types of soils, blue lupins germinated well and made satisfactory growth, and Sunn hemp proved to be the most promising plant for green manure after the rains.—The fertilizer experiments indicate the dominant need for phosphate in most of the coastal soils. In general, fertilizers with water-soluble phosphate maintained the lead over the less soluble forms; 2 proprietary complete fertilizers showed less increase than a moderate application of superphosphate only, fertilization with powdered raw rock phosphate gave remarkable results, and potassic fertilizers showed beneficial results in red clay soils relatively deficient in potash.—*Nellie E. Fealy.*

2843. Gooding, J. H. **A new effective seed disinfectant.** Seed World 17^{13}: 14–15. 1925.—This is a discussion of the use, application and value of Semesan as a seed disinfectant.—*M. T. Munn.*

2844. Gruenig, Georg. **Ueber Abtötung der Tuberkelbazillen in abgekapselten tuberkulosen Herden. [Killing tuberculosis bacilli in encapsulated masses.]** *34 p.* F. W. Schmidt: Berlin, [1922].—Cooking for ½ hour was not found sufficient to kill tuberculosis bacilli encapsulated in large numbers in different animal organs. To be sure of killing them it is necessary, after a preliminary cooking, to put the organs through a meat grinder and cook again for ½ hour.—*L. C. Cash.*

2845. Küster, Ernst. **Pathologische Pflanzenanatomie in ihren Grundzügen. [Pathological plant anatomy and its essential characteristics.]** 3rd ed. *xii + 558 p. 285 fig.* Gustav Fischer: Jena, 1925.—The special subjects treated in this work are variegation, etiolation and similar phenomena, hyperhydric tissue, wound tissue and regeneration, and galls. The general subjects discussed are the histogenesis of pathological tissue, the mechanics of the development of pathological tissue, and the ecology of pathological tissue.—*L. C. Cash.*

2846. Lees, A. H., and H. R. Briton-Jones. **Plum aphis and brown rot control.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 61–65.* 1924.—In addition to brown rot and aphis, winter moth caterpillars also were found present; notes on the combatting of the latter insect were therefore also included. No spray material used completely controlled aphis, brown rot and caterpillar. Lime-sulphur partly controlled all, but not satisfactorily. Caustic soda and soap were satisfactory against aphis and caterpillars but not against brown rot; adding nicotine or paraffin did not increase their effectiveness. Carbo fluid at a strength of 7% completely controlled aphis and brown rot and was fairly effective against the caterpillars.—*W. H. Chandler.*

2847. Manuel, H. L. **Use of spreaders with Bordeaux mixture.** Agric. Gaz. New South Wales **36**: 702. 1925.—The 2 spreaders used were casein at the rate of 1 ounce to 10 gallons of Bordeaux mixture, and resin fish oil soap at the rate of 1 pint to 25 gallons of Bordeaux. Both spreaders worked well, giving better applications than when Bordeaux was applied without them. Casein is recommended because of its relative cheapness.—*L. R. Waldron.*

2848. Orton, W. A. **The distribution of disease-resistant, disease-free, and disinfected seed by the seed trade.** Seed World 14^{4}: 13–15. 1923.

2849. Rabanus, Adolf. **Holzzerstörende Organismen und ihre Bekämpfung. [Wood-destroying organisms and their prevention.]** *30 p.* Wilhelm Knapp: Halle, 1925.—The organisms discussed are *Merulius domesticus Polyporus vaporarius, Coniophora cerebella, Paxillus acheruntius, Lentinus squamosus, Lenzites, Ceratostomella, Anobium, Hylotrupes bajulus,* termites and *Teredo navalis.*—*L. C. Cash.*

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

Heber W. Youngken, *Editor*
E. N. Gathercoal, *Assistant Editor*

(See also in this issue Entries 2464, 2659, 2916, 2923, 2991)

2850. Adams, John. **Medicinal plants and their cultivation in Canada.** Canada, Dept. Agric. Bull. n. s. 36. *1–29. fig. 1–20.* 1923.—The suitable conditions of soil and climate are

discussed and instructions given for cultivation, collecting and drying. Following a brief explanation of botanical terms, descriptions are given of 41 species of medicinal plants.—*T. G. Major.*

2851. Arnold, Carl. **Repetitorium der chemie, mit besonderer berücksichtigung der für die medizin w chtigen verbindungen sowie des deutschen arzneibuches und anderer pharmakopöen. Namentlich zum gebrauche für mediziner und pharmazeuten.** [Compendium of chemistry, with special consideration to the compounds important to medicine as well as to the German and other Pharmacopoeias. Especially for the use of physicians and pharmacists. *16th enlarged ed. xi + 686 p.* L. Voss: Leipzig, 1923.

2852. Blommendaal, H. N. **Preliminary paper on the ripening of the oil palm-fruits.** Communications Gen. Exp. Sta. A. V. R. O. S. Gen. Ser. 20. *1–43.* 1925.—Studies were made of various factors important to the palm oil industry. Oil first begins to form in the fruit approximately 130 days after pollination and then proceeds rapidly to a maximum in about 24 days. At that time the fruit is mature, and while the percentage of oil varies greatly in individual fruits it averages about 20–22%. The oil content remains at a maximum for about 3 days and then slowly diminishes. This diminution in amount of oil is accompanied by an increase in free fatty acid and the quality of the oil which has not changed up to this time consequently becomes somewhat poorer. The oil content of fruits picked immaturely will not increase in storage. For the vicinity of Medan (Sumatra)picking every 5 days is recommended as most economical.—*C. M. Conrad.*

2853. Bock, J., R. Boehm, and others. (Edited by A. Heffter.) **Handbuch der experimentellen pharmakologie.** [Handbook of experimental pharmacology.] *1296 p., 2 pl. 127 fig.* J. Springer: Berlin, 1923.

2854. Browerman, Alvin. **Poisoning of cattle by sweet clover hay.** Jour. Amer. Vet. Med. Assoc. **67**: 367–371. 1925.—Because of the deaths of some cattle in Delaware and Warren Counties, Ohio, from a disease resembling blackleg, an investigation was made which showed that all had been fed upon sweet clover hay. The symptoms are described. Bacterial cultures were negative. Feeding experiments were made upon 3 head of cattle with Melilotus hay. All died. A somewhat detailed description is given of the symptoms and of the autopsy findings. The literature of the subject is reviewed, and it is stated that the exact cause of the poisoning is in doubt. It may be from a toxic substance in the sweet clover, or possibly from a substance produced from the plants by the action of molds or other microorganisms.—*C. D. Marsh.*

2855. Carne, W. M. **Thorn Apple (Datura Stramonium Linn).** Jour. Dept. Agric. Westtern Australia 2nd Ser. **2**: 67–68. *1 pl.* 1925.—The author describes the plant and comments on its poisonous character and methods of control. Buyers of Sudan Grass seed are urged to examine stocks for admixture with Thorn-apple seed.—*P. J. Olson.*

2856. Cerighelli, Raoul. **La culture des plantes à parfum dans le midi de la France.** [Culture of perfume plants in southern France.] Office nation. matières primières veg. pour la drog., pharm., distill. et la perfum. Notice no. 18. *1–24.* L. Declume: Lons-le-Saunier; France, 1925.

2857. Fleenor, W. **Hemorrhage in bull fed on sweet clover.** Vet. Med. **20**: 269–270. 1925.—A bull had a very severe hemorrhage from a small wound in the ear. The author considers that the severity of the hemorrhage was due to the fact that the animal had been eating sweet clover, and quotes another similar case.—*C. D. Marsh.*

2858. Fyles, Faith. **Principal poisonous plants of Canada.** Canada, Dept. Agric. Bull. 2nd Ser. 39. *1–112. Pl. 1–40.* 1920.—Following a short discussion of several methods of control, the author describes in detail a large number of poisonous plants. In each case the poisonous properties, animals affected, symptoms, remedies and methods of control are taken up.—*T. G. Major.*

2859. Gillam, W. Graham. **The effect on live stock, of water contaminated with fresh water algae.** Jour. Amer. Vet. Med. Assoc. **67**: 780–784. 1925.—This is a paper read before the Portland meeting of the Amer. Vet. Med. Assoc. A brief description is given of the algae forming the scum or "bloom" which is seen on some lakes in the summer season. Cases are reported in Alberta at Fort Saskatchewan, Longheed, and Lake Saskatoon, of live stock killed

by drinking the water containing algae. Post-mortem examinations were made of a few of the animals. The author apparently thinks that the toxin is produced by the decomposition of the algae.—*C. D. Marsh.*

2860. Härtel, F. **Vorschläge zur Ergänzung bezw. Abänderung der Leitsätze für die Beurteilung von Kakao und Kakaowaren.** [**Proposals for amplication and change of criteria for evaluation and judgment of cacao and cacao-products.**] Zeitschr. Untersuch. Nahrungs- u. Genussmittel **50**: 122–135. 1925.—This paper was read before the 22nd Convention of the "Vereins Deutscher Nahrungsmittelchemiker." It formulates and discusses a series of definitive descriptions (somewhat like the monographs of pharmacopoeias and similar works) of cacao and various cacao products. A discussion followed, which is reported in detail.—*E. E. Stanford.*

2861. Jacobs, W. A., and A. N. Collins. **Strophanthin. VII. The double bond of strophanthidin.** Jour. Biol. Chem. **64**: 383–389. 1925.

2862. Kinsley, A. T. **Shinnery poisoning.** Vet. Med. **20**: 354–355. 1925.—Oak poisoning occurs in Kansas, Oklahoma, Texas, New Mexico and Utah. "Shinnery" poisoning occurs in the last 3 states. An account is given of losses and their causes, and symptoms and autopsy findings are discussed.—*C. D. Marsh.*

2863. McKee, Clyde. **Investigation of livestock losses on sweet clover pasture.** Jour. Amer. Soc. Agron. **17**: 79–84. 1925.—A report of conditions in 12 states. Losses due to bloat on sweet clover have as a rule been infrequent.—*F. M. Schertz.*

2864. Macy, Icie G., and Julia P. Outhouse. **Further studies on cotton seed meal injury.** Amer. Jour. Physiol. **69**: 78–91. 1924.—Gossyptol, the yellow pigment of cotton seed meal with phenolic properties, has heretofore been indicated as poisonous to animals. This investigation substantiates the former reports of injurious effects of the meal and also of gossyptol acetate upon young dogs and describes various effects upon the animals.—*Ernest S. Reynolds.*

2865. Pammel, L. H. **Black nightshade.** Vet. Med. **20**: 404. 1925.—*Solanum nigrum* has long been listed as a poisonous plant. The ripe berries are probably not poisonous.—*C. D. Marsh.*

2866. Pammel, L. H. **Blue sage.** Vet. Med. **20**: 402. 1925.—A loss of pigs may have been caused by blue sage, *Salvia lanceaefolia*, or *Dysodia papposa.—C. D. Marsh.*

2867. Pammel, L. H. **Caltrop weed.** Vet. Med. **20**: 468. 1925.—*Kallstoemia maxima* is not known to be poisonous but belongs to a family some members of which have toxic properties.—*C. D. Marsh.*

2868. Pammel, L. H. **Cup plant, golden alexander and alum root.** Vet. Med. **20**: 404. 1925.—These plants, *Silphium perfoliatum*, *Zizia aurea* and *Heuchera hispida*, suspected of poisoning swine, are not poisonous.—*C. D. Marsh.*

2869. Pammel, L. H. **Is pigweed poisonous?** Vet. Med. **20**: 468–469. 1925.—*Amaranthus retroflexus* does not possess a toxic principle.—*C. D. Marsh.*

2870. Pammel, L. H. **Is the wild blue sage poisonous?** Vet. Med. **20**: 469. 1925.—Blue sage, *Salvia lanceaefolia* is not known to be poisonous.—*C. D. Marsh.*

2871. Pammel, L. H. **Mouldy corn.** Vet. Med. **20**: 200–201. 1925.—Of molds found on corn, *Mucor nigricans* and *M. racemosus* are not poisonous, but a pinkish mold sometimes produces a toxemia.—*C. D. Marsh.*

2872. Pammel, L. H. **Peach sprouts poisonous.** Vet. Med. **20**: 402–403. 1925.—Deaths of 3 cows were probably caused by eating sprouts growing at the bases of peach trees.—*C. D. Marsh.*

2873. Pammel, L. H. **Sheep sorrel, yarrow, evening primrose and false flax.** Vet. Med. **20**: 403. 1925.—Of these plants, which were suspected of poisoning stock, the only one with definite stock poisoning possibilities is the sheep sorrel, *Rumex acetosella.—C. D. Marsh.*

2874. Pammel, L. H. **Squirrel tail grass injurious.** Vet. Med. **20**: 200. 1925.—*Hordeum jubatum* has caused considerable loss of live-stock from the awns getting under the gums and resulting in pus infection. This grass also sometimes contains ergot.—*C. D. Marsh.*

2875. Pammel, L. H. **Water parsnip.** Vet. Med. **20**: 468. 1925.—*Sium cicutifolium* is poisonous. A brief description is given and it is distinguished from cowbane. *Sium latifolium* is said also to be poisonous.—*C. D. Marsh.*

2876. Pammel, L. H. **White five finger.** Vet. Med. 20: 468. 1925.—*Potentilla arguta* is not known to have poisonous properties.—*C. D. Marsh.*

2877. Pammel, L. H. **White snake root.** Vet. Med. 20: 466–467. 1925.—Answering an inquiry and a newspaper clipping giving an account of poisoning by *Eupatorium urticaefolium*, the author states his opinion that white snakeroot is poisonous.—*C. D. Marsh.*

2878. Pammel, L. H. **Whorled mikweed poison qualities.** Vet. Med. 20: 467–468. 1925—*Asclepias verticillata* or *Hypericum* may explain a loss of horses.—*C. D. Marsh.*

2879. Pammel, L. H. **Wild indigo.** Vet. Med. 20: 404–405. 1925.—All the species of *Baptisia* are poisonous.—*C. D. Marsh.*

2880. Parry, Ernest J. **Parry's cyclopedia of perfumery: A handbook on the raw materials used by the perfumer, their origin, properties, characters and analysis; and on other subjects of theoretical and scientific interest to the user of perfume materials, and to those who have to examine and value such materials.** *2 vols. 840 p.* J. & A. Churchill: London, 1925. —"The need for a scientific work of reference devoted to perfume and its raw materials has long been felt, and it is hoped that the publication of the present volumes will go some way towards meeting that want."—The "raw materials" dealt with are alphabetically arranged.—*Frederick V. Rand.*

2881. Tanaka, Usio. **An experimental study on malt sprout poisoning.** (English with Japanese abstract.) Nippon Zyûigakkwai Zazzi Tôkyô [Jour. Vet. Sci. Assoc. Japan] 2: 93–99. 1923.—The physiological disturbance in domestic animals caused by infestion of malt sprouts, a by-product of the brewing industry, is to be attributed to the action of hordenin, an alkaloid contained therein. The toxicity of the alkaloid is very weak, so that it is not always irrational to use the malt sprouts as an auxillary fodder.—*I. Amemiya* (*Courtesy Japanese Jour. Bot.*)

2882. Urbain, G. **Intoxication de la Poule par les poisons d'Aspergillus fumigatus. [Poisoning of fowls by Aspergillus fumigatus.]** Ann. Med. Vet. 70: 59–63. 1925.—A number of chickens on farms near Luxembourg died of a non-contagious disease. The disease had both an acute and chronic form. The symptoms in the acute form were somnolence, sometimes convulsions, and paralysis of the wings and legs, with death in 48 hours. In the chronic form they lived 8–15 days; they were somnolent and remained in the same place for hours refusing food. The crops were found filled with fermented maize infected with *A. fumigatus*, shown to be the cause of the trouble. Other authors are quoted both as to *A. fumigatus* and other forms of mycosis.—*C. D. Marsh.*

2883. Wilson, J. W., and A. H. Kuhlman. **Smutted corn silage for pregnant cows.** South Dakota Agric. Exp. Sta. Bull. 199. *477–482.* 1922.—After a brief summary of the conditions and nature of smut infection, the authors give the results of feeding 4 pregnant cows smutted parts of corn for 26 days, at the rate of 2 pounds per day. No injury resulted, thus agreeing with similar results quoted from 4 other stations.—*E. J. Petry.*

PHYSIOLOGY

B. M. Duggar, *Editor*

W. J. Robbins, *Assistant Editor*

(See also in this issue Entries 2250, 2295, 2308, 2317, 2350, 2353, 2374, 2417, 2481, 2490, 2496, 2533, 2537, 2582, 2752, 2769, 2789, 2800, 2801, 2818, 2840, 2852)

PERMEABILITY, PHYSICO-CHEMICAL RELATIONS

2884. Adolph, E. F. **Electrostatic forces in the diffusion of water through collodion membranes between solutions of mixed electrolytes.** Jour. Biol. Chem. 64: 339–368. 1925.—Work on the diffusion of water into solutions of electrolytes through collodion membranes and gelatin-treated collodion membranes is reported. The predominant influence of multivalent ions and ions of opposite sign are considered. Biological applications of the work are discussed.—*Geo. B. Rigg.*

2885. Cranner, B. Hansteen. **Zur Biochemie und Physiologie der Grenzschichten lebender Pflanzenzellen. [The biochemistry and physiology of living plant-cell membranes.]**

Meld. Norges Landbrukshøiskole **1922**[1–2]: 1–160. *Pl. 1–17.* 1922.—In the chemical section of the paper the author describes numerous experiments carried out at different temperatures with different tissues of turnip (*Brassica Rapa f. rapifera*), peas (*Pisum arvense punctatum* and *Pisum sativum glaucospermum*), horse bean (*Vicia Faba L*), and wheat (var. Sammersweizen).—Experiments described in the physiological section are concerned with the influence of temperature, ions of various salts and their concentrations on the extraction of water-soluble phosphatids from the living tissues of onion bulb-scales and of the beet, as well as on the extraction of coloring matter from the latter.—The author feels justified in drawing the following conclusions although he states that further tests should be made: (1) That the plasmolytic boundary layers of cell substances (the plasma-membrane and the vacuole-membrane) consist of a colloidal system, whose semi-solid, hydrophillic, dispersion medium, though insoluble in water, is a colloid capable of swelling, and whose liquid dispersed phase consists of phosphatids that are entirely soluble in water; (2) that these boundary layers with their collective phosphatids penetrate the adjacent cell walls and are thus intimately combined with them; and finally, (3) that the cell walls of all living cells consist of a colloidal network whose rigid structure is built of cellulose and hemicellulose, but whose meshes contain all the phosphatids of the plasmolytic membrane.—*Earl S. Johnston.*

2886. Hastings, A. B., and J. Sendroy, Jr. **The effect of variation in ionic strength on the apparent first and second dissociation constants of carbonic acid.** Jour. Biol. Chem. **65**: 445–455. 1925.—The 1st and 2nd constants have been determined and equations for computing the relations to the ionic strength of the rotation are given. The biological and chemical importance of carbonic acid is pointed out.—*Geo. B. Rigg.*

2887. Hoffman, W. F., and R. A. Gortner. **The electrodialysis of agar. A method for the preparation of the free agar-acid.** Jour. Biol. Chem. **65**: 371–379. 1925.—By electrodialysis of commercial agar the calcium was removed practically quantitatively but no sulphur was removed. A 1% solution of the free agar-acid had a pH of 2.475, and was apparently about 56% ionized. All of the sulphur of agar is in the form of sulphuric acid, and the free agar-acid is apparently an acid sulphuric acid ester. Sols of the free agar-acid containing as much as 5% of the agar-acid do not gelatinate on cooling. Appreciable autohydrolysis takes place when sols of the agar-acid are heated. When sols of the free agar-acid are neutralized by the addition of a base, rigid gels are obtained. Organic bases such as aniline and the alkaloids form salts with the agar-acid and set to rigid gels. The molecular weight is probably about 3000 and seems to correspond to the formula $R-O-SO_2-OH$ where R is a large polysaccharide residue. A paper by Harvey is quoted as giving data on the viscosity of electrodialyzed agar. The gelation of agar is the gelation of a salt and not of a complex polysaccharide.—*Geo. B. Rigg.*

2888. Lapicque, Louis. **La cellule est-elle enveloppée d'une membrane semi-permeable? [Is the cell enclosed by a semi-permeable membrane?]** Ann. Physiol. et Physicochim. Biol. **1**: 85–104. 1925.—This is a résumé of literature, from which the author derives a negative reply to the query.—*Joseph S. Caldwell.*

2889. Lepper, L. **Vitalfärbungsversuche an überlebenden Bindegewebezellen. [Investigations upon vital staining in the cells of excised portions of connective tissue.]** Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosc. Anat. **2**: 249–256. *3 fig.* 1925.—Bits of subcutaneous connective tissue were aseptically removed from frogs and placed for varying lengths of time in isotonic Ringer-Locke solution, with or without trypan blue. Other bits were fixed immediately upon removal from the body, and studied histologically as controls. The same tissues of the frog were examined after injection of the living animal. Absorption of the dye in granular form occurred in the tissues of injected animals; and in the tissues subjected after removal to the dye in Ringer-Locke solution, absorption took place in the case of the macrophages or histiocytes. In dogs, no absorption occurred where bits of tissue were removed and placed in Ringer-Locke solution with trypan blue, but pieces placed in blood plasma containing the dye absorbed the color. In the case of dogs' ears, removed from the body and then injected with the dye, no absorption occurred. From these observations the conclusion is drawn that the loss of the ability to absorb and store vital dyes is not a sign of death in the cell, but that this ability is dependent upon the presence of external factors, such as the presence of plasma albumin.—*Ralph E. Cleland.*

2890. Moellendorff, Wilhelm von. **Beiträge zur Kenntnis der Stoffwanderungen bei wachsenden Organismen. IV. Die Einschaltung des Farbstoffstransportes in die Resorption bei Tieren verschiedenen Lebensalters. Histophysiologische Beiträge zum Resorptionsproblem.** [The movement of materials in growing organisms. IV. The movement of dyes, during resorption, in animals of various ages. Histophysiological contributions to the resorption problem.] Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 129–202. *2 pl., 6 fig.* 1925.—Solutions of trypan blue or of india ink were either fed to young mice and guinea pigs, both before and after weaning, or the trypan blue was given subcutaneously. The intestinal lining was found to be more absorptive in the younger animals, so that more resorption of the dyes occurred in these than in older ones. Animals into which the dye was introduced by injection showed a greater resorption the older they were, but this was due to the fact that the dye made its way into the intestine via the various digestive glands, and in unweaned animals these were as yet barely functional. Therefore, more resorption of the dye occurred in older animals, in spite of the fact that the power of the intestinal wall to absorb the dye was less in these animals than in the younger ones. A very detailed account of the experiments and their results is given.—*Ralph E. Cleland.*

2891. Wassiljeff, A. **Zur Resorption einiger Vitalfarbstoffe durch den Froschdarm.** [The resorption of certain vital stains by the frog intestine.] Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosc. Anat. 2: 257–263. *2 fig.* 1925.—A 0.5% solution of trypan blue in 0.5% NaCl, and a 2% solution of lithium carmine were used, being injected into the intestines of frogs, which in some cases were tied off above and below. The stains were deposited in granular form in the histiocytes of the intestinal wall, and were found in a diffused state in the epithelial cells and in the rest of the mucous lining. A considerable degree of necrosis, however, was found in the cells in which diffuse pigmentation was present. Kupffer's cells in the liver, and the epithelial cells in the kidneys were stained infrequently, and then only in cases where the intestine had been tied off. The intestinal epithelium is therefore permeable to trypan blue and lithium carmine, but the epithelial cells are considerably injured by the dyes.—*Ralph E. Cleland.*

WATER RELATIONS, TRANSLOCATION

2892. Bose, Jagadis Chunder. **Circulation and assimilation in plants.** Proc. Roy. Soc. Med. 17: 19–24. *Fig. 1–3.* 1924.—The movement of sap inside the tree is invisible and no accurate means have hitherto been available for the measurement of the normal rate of the ascent of sap. The author has overcome the difficulty by devising 3 types of apparatus.—Discounting the experiments of Strasburger, and labeling them as inferences, Bose submits evidence from the recovery encountered where 2 similar developing shoots are used, one being placed in water and the other in formaldehyde. As the latter does not recover its turgidity, he regards the movement of sap as "essentially due to the cellular activity in living plants." A definite active tissue extends throughout the length of the tree and the cellular pulsations are responsible for the rise.—The water taken up by the root causes what he designates intravascular pressure. An excessive exudation may occur when a hole is drilled into the tree. The "butting" and "milking" of the palm trees are taken as examples. By means of his electric probe in the circuit with a recording galvanometer, Bose is able to find that in dicotyledonous plants the pulsating layer is located in the inner portion of the cortex. The energy for lifting water to a height of 450 feet resides in the breakdown of substances in respiration. By means of a special instrument called a photosynthetic recorder, it is possible to measure photosynthetic deposits of carbohydrates as minute as a millionth of a gram.—Bose found that certain chemical substances in very dilute solution increased the activity. One part of thyroid extract in two billion increases activity to the extent of 70%. Iodine produces much the same result. From this he suggests the possibility of the role of vitamins, hormones, etc.—As the plant is a multicellular organ, there is a necessity for intercommunication and interaction. This is brought about in 2 ways: (1) By hydraulic connection of liquids carrying chemical substances in solution, such as occurs in the circulation of sap.—(2) By the conduction of excitatory change along certain tissues in the plant which function as nerves.—He further contends that such investigations as his establish the fact that there is a unity of physiological mechanism in all life.—*A. L. Bakke.*

2893. Bose, J. C. **The ascent of sap in plants.** Scientia **1924**: 81–88. 1924.—The author states that although the ascent of sap has remained an unsolved mystery for the last 200 years, the results of his recent investigations (Physiology of the ascent of sap) offer a full explanation. The early experiments of Strasburger and the removal of water by transpiration is placed in the "supposed" category. Bose says further that the movement of sap inside the tree is invisible, but by the aid of special apparatus he is able to secure a record of the ascent. His experiments on the effect of poisoning are diametrically opposed to those of Strasburger. The ascent of sap is maintained by "incessant and throbbing activity of certain living tissues by which the sap is pumped upwards." The pulsating tissue can be distinguished from ordinary tissue in that: (1) a rhythmic tissue can be rendered alternately active or inactive; (2) a certain amount of internal hydrostatic pressure and turgor is necessary; (3) the pulsating effect is greatly enhanced by a dilute anaesthetic like ether; (4) a stimulus such as an electric shock modifies the pulsations.—Bose further contends that the cortical tissue is the one concerned in the propulsion of sap. His proof of the validity of the conclusion that the cortex is the active agent centers in the action of a "weeping" Mango tree which exudes large quantities of sap from a vent on the right side of the trunk at certain times. He gives conclusive proof (1) that the pulsatory activity of the cortex forces water not only upward but also in a lateral direction, (2) that the alburnum is the channel for mechanical transport of water. Transpiration is considered a process of excretion by the leaf cells. He further states that due to the high rate of ascent in varnished plants with root cut off, transpiration and root pressure are not essential for the ascent. The rise is due to the physiological activity of living cells. By means of an electric probe which is gradually introduced transversely into the stem, a record is made as soon as the probe comes in contact with the active layer. When the probe is pushed into the wood the pulsations disappear. Any agent which enhances the pulsatory activity also increases the rate of ascent of sap.—Since the plant is a multi-cellular organism there is a necessity for intercommunication. This is accomplished (1) by transfer of matter, (2) by transmission of motion. Bose finally generalizes as follows. "For we find in the plant and in the animal cell similar contractile movements in response to stimulus, similar movement of fluid by pumping action, similar nervous mechanism for the transmission of excitation and similar reflex movements at the distant effector."—*A. L. Bakke.*

2894. Mayer, Andre, et L. Plantefol. **Recherches sur l'hydration des mousses par la vapeur d'eau.** [**Studies on the hydration of mosses by water vapor.**] Ann. Physiol. et Physicochim. Biol. **1**: 64–84. 1925.—Leafy shoots of *Hypnum triquetrum* were used. After rapid drying in air they were kept over H_2SO_4 until needed for use. Water-free material absorbs water from a saturated atmosphere at a rate comparable with that for 20% H_2SO_4, but the rate of absorption decreases rapidly after the material has taken up about 40% of its weight. Equilibrium with the atmosphere is practically attained when the material has a water content of 50%.—*Joseph S. Caldwell.*

2895. Snow, R. **The transport of organic foodstuffs in plants.** Nature **116**: 360. 1925.—Experiments are reported in which roots of *Salix fragilis* connected with the shoots by strips of rind only, continued to grow, showing downward translocation of foodstuffs.—*O. A. Stevens.*

MINERAL NUTRIENTS, SALT RELATIONS

2896. Cayeux, L. **Existence de silex à Diatomées dans les caillasses du calcaire grossier des environs de Paris.** [**The existence of silicon in diatoms in the calcareous formation in the vicinity of Paris.**] Compt. Rend. Acad. Sci. Paris **180**: 1670–1672. 1925.

2897. Lipman, C. B., and A. Gordon. **Further studies on new methods in the physiology and pathology of plants.** Jour. Gen. Phys. **7**: 615–623. 1925.—The authors describe attempts which have constituted improvements on the early methods of tree injections; their method is described in detail. Penetration occurred with leafless trees as well as in those with foliage, but more slowly. Details are given as to the amounts of water which trees absorb and the distribution of solutions in the trees after injection; results of tests showed rapid distribution of injected solutions of Mg, Ca, K, and Na salts. The same salt injected into different varieties of fruit trees may produce different and specific effects, as experimentally shown. ". . . . while trees may be easily injured by certain chemical compounds, they may recover

from injections of very large amounts of certain toxic substances. This seemed to indicate that non-toxic salts, among them those considered essential to plant life, might with impunity be injected into trees in high concentrations . . . . . There can be little doubt that Ca and K salts in lower concentrations than those considered . . . . will have stimulating rather than retarding effects . . . . . Moreover, we have been able to show that the period of the year in which the salt injections are made is a factor of great importance." The spraying of trees or painting of cut surfaces with $FeSO_4$ as a treatment for iron-deficiency chloroses have hitherto failed because not enough $FeSO_4$ was introduced into the plant. Failures with soil applications are accounted for through precipitation of the iron salts by hydroxyl ions of the soil solution. In the authors' experiments, injections of 0.1 to 7 gm. of $FeSO_4$ into lemon trees which had been chlorotic for some years, "caused the foliage to become green and induced renewed growth and the production of green vigorous-looking branches. . . . . If trees can withstand the injection of as much material as our experiments indicate we should be able to attack the problem of freeing them from bacteria, fungi, and possibly insects."—*Frederick V. Rand.*

2898. Mann, C. E. T. **The physiology of the nutrition of fruit trees. I. Some effects of calcium and potassium starvation.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 30–45. Pl. 1–2, fig. 1–2.* 1924.—Cox's Orange apple trees on broadleaved Paradise roots were grown in washed silver sand in waxed pots. One series was watered with a complete nutrient solution; 1 series with a nutrient solution from which K was omitted, $NaNO_3$ being substituted for KNO_3; and 1 series was watered with a solution from which Ca was omitted, Na_2SO_4 being substituted for $CaSO_4$. When K was deficient small leaves, which suffered from leaf scorch, were produced. The plants having a nutrient solution deficient in Ca bore leaves larger than those on plants having a complete nutrient solution. Preliminary experiments, using the Livingston cobalt paper method of measuring transpiration, suggested that in dull light transpiration was lower with leaves from trees having a deficiency of K than with leaves from trees of the other 2 series; in bright sunlight the reverse seemed to be true. Some gooseberry plants were grown in the same series; with them K deficiency seemed to cause the leaves to have a lower water content and less ability to resist loss of water.—*W. H. Chandler.*

2899. Noetzel, O. **Die Bestimmung von Silicofluoriden neben Fluoriden in organischen Stoffe. [Determination of silico-fluorides in organic matter in presence of fluorides.]** Zeitschr. Untersuch. Nahrungs- u. Genussmittel **49**: 204–206. 1925.

2900. Wallace, T. **Pot experiments on the manuring of fruit trees. IV.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 12–24.* 1924.—Experiments with fruit plants growing in silver sand in glazed pots were begun in 1921. There was a series of plants watered with complete nutrient solution, a series watered with a complete nutrient solution having an extra amount of sodium sulphate, a series watered with rain water only, and 5 other series from each of which one of the elements, N, K, P, Ca or Mg was omitted. A part of this report gives the results with these plants for the season of 1924. With apple trees, considering the series watered with a full nutrient solution to have made normal growth, that watered with rain water made about 3%, that with N omitted 2.5%, that with P omitted 7.7%, that with K omitted 70.3%, that with Mg omitted 80.6%, and that with Ca omitted 131.9% of normal growth. With black currant and raspberry plants the results were similar, except that the series having Mg omitted made better growth than that having a full nutrient solution, or that having Ca omitted. Of course, the omission of N was highly injurious to the foliage of all plants, and the omission of P was nearly as injurious. With all kinds the omission of K caused the development of a brown marginal leaf scorch. With gooseberries the omission of Ca or Mg caused only slight injury to the foliage, some red bands forming. With raspberries and apples omission of Mg caused earlier dropping of the leaves and a blotching that could be reduced or prevented by increasing the amount of Mg. The experience of 1 season suggests that the omission of S from the nutrient solution causes reduced growth and earlier dropping of the foliage.—In 1924 experiments were started with different plants in complete nutrient solutions having a pH value of 3.0, of 6.6 and of 9.0. At the end of 1 season little difference in behavior of the plants was to be observed. The omission of P in the earlier deficiency experiments caused the pH value of the solution to be lowered from 6.6 to 4.7. Therefore in 1924,

experiments were started with plants watered with solutions without P but having a pH value of 3.0 and with other plants watered with solutions without P but having a pH value of 6.6. In both series the injurious effects on the foliage of phosphorus deficiency was shown; but, in the one season, there was little if any difference caused by the reaction of the solution.—*W. H. Chandler.*

PHOTOSYNTHESIS, CHLOROPHYLL

2901. Wurmser, Renè. **Le rendement enérgétique de la photosynthèse chlorophyllienne.** [The energy yield in photosynthesis by chlorophyll.] Ann. Physiol. et Physicochim. Biol. **1**: 47–63. 1925.—The initial step in photosynthesis is regarded as a linked oxidation and reduction. Carbon dioxide is not involved in the 1st phase, which consists in the oxidation of a substance A, with a resulting gain in energy, the chlorophyll acting as a sensitizer. Diffusing into the stroma of the chloroplasts, A gives up its energy, making possible the 2nd phase of the reaction, in which CHOH is formed from CO_2 and H_2O. The author reviews his previous publications (Compte Rend Soc. Biol. **83**: 437, 1920; and Archives de Physique Biol. **1**: 33, 1921), in which this conception has been advanced. In the experiments reported, pieces of thallus of *Ulva lactuca* were exposed in sea water to light of low, accurately measured intensity, and the portion of the light absorbed was determined. A correction for absorption by cell-walls was obtained by checks with colorless pieces of thallus. The oxygen set free during exposure to light was measured and checked against that absorbed by similar pieces kept in darkness. In red light the energy utilized in photosynthesis was 59% of that absorbed, in green light 83%.—*Joseph S. Caldwell.*

METABOLISM (GENERAL)

2902. Bridel, Marc. **Le primevérose, les primevérosides et la primevérosidase.** [Primeverose, the primeverosides and primeverosidase.] Bull. Soc. Chim. Biol. **7**: 925-932. 1925.—Primeverose is a xyloglucose first obtained in 1912 by Goris, Mascre and Vischniac by hydrolysis of a mixture of the glucosides primeverine and primulaverine from the root of *Primula officinalis*. Its properties were not well defined by the discoverers and Bridel has consequently repeated and amplified their work. In various earlier papers he has reported the discovery of 5 laevorotatory glucosides which yield primeverose on hydrolysis. These are grouped under the designation, primeverosides. They are obtained from widely separated genera, *Primula, Gentiana, Monotropa, Betula, Spiraea,* and *Rhamnus*. The compounds combined with primeverose in the various glucosides are widely diverse in character, but all the glucosides are hydrolyzed by an enzyme which is present not only in all the species containing primeverosides but also in others, as *Cornus*. This enzyme has been variously called betulase, gaultherase, and primeverase, but these names should be replaced by primeverosidase.—*Joseph S. Caldwell.*

2903. Heller, V. G., C. H. McElroy, and Bertha Garlock. **The effect of the bacterial flora on the biological test for vitamin B.** Jour. Biol. Chem. **65**: 255–264. 1925.

2904. Jacobs, W. A. **Saponins. III. The sapogenia occurring in Sapindus saponaria L. and Sapindus mukorassi utilis (Trabuti).** Jour. Biol. Chem. **64**: 379–381. 1925.—The sapogenin which is obtained from *Hedera helix* as well as from the 2 species of *Sapindus* is hederangenin ($C_{31}H_{50}O_{40}$).—*Geo. B. Rigg.*

2905. Kulp, Walter L. **Indol Studies.** Jour. Bact. **10**: 459–471. 1925.

2906. Levene, P. A., and Ida P. Rolf. **Bromolecithins. I. Fractionation of brominated soy bean lecithins.** Jour. Biol. Chem. **65**: 545–549. 1925.—The results obtained favor the view that the ordinary lecithins are mixtures of several individual forms.—*Geo. B. Rigg.*

2907. Levene, P. A., and H. Sobotka. **The thio-sugar from yeast.** Jour. Biol. Chem. **65**: 551–554. 1925.

2908. Levine, Victor E. **The reducing properties of microorganisms with special reference to selenium compounds.** Jour. Bact. **10**: 217–263. *1 pl.* 1925.—Living bacteria bring about the reduction of selenious acid, selenic acid, and sodium selenite. Sodium selenate is not reduced, nor is potassium selenocyanide. Due to decomposition induced by acids, metabolically produced, selenium may, however, be deposited from potassium selenocyanide,

as in the case of *Bacillus coli* cultures. Heated cultures do not reduce. The media employed should not contain chemical reducing substances, such as glucose or lactose. Reduction is a vital process; it is an intracellular process. The reductase elaborated by the bacterial cell is an endoenzyme reducing energetically in the presence of an activating substance or coenzyme, which is capable of being dissolved out from the cell or of being removed by Berkefeld filtration. Selenious acid, sodium selenite and selenic acid retard growth. The extent of retardation depends upon the concentration and chemical nature of the selenium compound and upon the individuality of the organism. *Streptococcus pyogenes* is more sensitive than *B. coli*. The anaerobes of symptomatic anthrax, oedema, and tetanus are extremely sensitive and growth does not take place except in minute concentrations of the above named selenium compounds. Sodium selenate and potassium selenocyanide in the quantities used show but slight retarding effect on growth. Reduction is directly proportional to the intensity of growth. When there is no growth there is no reduction, but when the concentration of selenium compound is very small (1:200,000) there may be growth without visible evidence of reduction. This lack of visible selenium may be due to its removal by volatilization. With higher concentration of selenium compounds in the culture medium the activity of reduction outbalances that of alkylation. Selenium dioxide or sodium selenite cannot be used as a differential test between aerobes and anaerobes, since both types reduce. There is no specific relation between reduction and formation of hydrogen sulphide, as Gloger maintained, since organisms such as *B. acidilactici*, *B. pseudodiphtheriae*, or *B. tuberculosis*, that produce no hydrogen sulphide or only faint traces, are capable of reducing selenium dioxide or sodium selenite. The diphtheria organisms have been tested with different concentrations of selenium dioxide and have been found to be efficient reducers. In the very high concentrations some organisms failed to grow and therefore gave no evidence of reduction. The reducing action on sodium selenite in very high concentration (1:10,000) by the various organisms in the colon-typhoid group may be of practical value in differentiating one type from another. *B. paratyphi* B reduces while *B. paratyphi* A does not. The difference in action harmonizes with the findings of Burnet and Weissenbach, Jordan and Victorson, and also Kligler. The investigators distinguished these 2 types of organisms by the use of lead acetate media, which made apparent the difference in the reducing action as manifested by the production of hydrogen sulphide. Microorganisms can be used as living reagents in the toxicological analysis for selenium. With the aid of certain alkylating molds, selenium can be detected by means of the characteristic and persistent odor of ethyl selenide. With the aid of bacteria that possess intense reducing activity, selenium compounds, in the form of the selenite ion, can be identified by the brick-red line or streak following the path of growth in a stab culture. Selenium compounds serve as better indicators for reducing enzymes than organic dyes. Since the reduction is localized in the bacterial zone of growth, it cannot be ascribed to metabolic products. Unlike the reduction of dyes, the decomposition of selenium compounds to free selenium is an irreversible reaction and the precipitated element shows no tendency to re-oxidize. For practical purposes selenium dioxide or sodium selenite in a concentration of 1:50,000 or 1:25,000 can be used to demonstrate bacterial reduction in a solid sugar-free culture medium. Selenium agar (0.15% Na_2SeO_3) as a culture medium for the selective growth of typhoid bacilli is superior to malachite green or endo agar, according to Guth.—*Author's summary.*

2909. Mach, F., und M. Fischler. **Die Zusammensetzung der moste des Jahres 1924 in Baden.** [**Composition of the musts of the year 1924 in Baden.**] Zeitschr. Untersuch. Nahrungs- u. Genussmittel **49**: 373–377. 1925.

2910. Neuberg, C., and M. Kobel. **Über das physiologische Verhalten des Acetoins. I. Über das Verhalten des Acetoins zu Hefe.** [**The physiological relation of acetoin to yeast.**] Biochem. Zeitschr. **160**: 250–255. 1925.—Synthetic, racemic acetoin in the presence of actively fermenting yeast gave a 60% yield of levorotatory $\beta.\gamma$-butylene glycol which was recovered and identified.—*H. D. Hooker.*

2911. Neuberg, C., and M. Kobel. **Weiteres zur Phosphorylierung des Zuckers.** [**Esterification of sugar with phosphoric acid.**] Biochem. Zeitschr. **160**: 464–466. 1925.—Esterification of fructose occurred in the presence of sodium pyro-phosphate as rapidly as in its absence except in alkaline solution. It is concluded that pyrophosphates are not used in the formation of fructose phosphoric acid esters.—*H. D. Hooker.*

2912. Rosa, J. T. **Chemical changes accompanying tuberization in potato.** Proc. Ann. Meeting Potato Assoc. America **11**: 107–108. 1924.—Analyses were made of different portions of the plant just before and during tuberization. The dry matter content in all parts of the plant except above-ground stems was found to increase rapidly. In the underground stems the glucose and sucrose content is high prior to stolon formation, low during this period, and increases when the tubers begin to form. Starch is practically absent at first in all parts of the plant but increases rapidly in the underground stems and leaves. Total acid-hydrolyzable polysaccharides are low at first but increase as tuberization begins. Total nitrogen is at a maximum in the early development and decreases rapidly throughout the remaining stages.—*Wm. H. Martin.*

2913. Sando, C. E. **Anthocyanin formation in Helianthus annuus.** Jour. Biol. Chem. **64**: 71–74. 1925.—The yellow flavonol glucoside quercimeritrin has been isolated from the ligulate corollas of the so-called orange double chrysanthemum-flowered sunflower. It is a monoglucoside of quercitrin and has the formula ($C_{21}H_{20}O_{12}$). This pigment is not responsible for the orange coloration of the flowers, which is undoubtedly caused by one or both of the plastid pigments, carotin and xanthophyll, but its bearing on the formation of anthocyanin in the chestnut-red and wine-red varieties is discussed. These 2 red varieties do not seem to contain different and distinct anthocyanins. The chestnut red color is caused by the presence of the red anthocyanin on an orange background, which is presumably of a plastid origin, while the wine-red modification seems to be due to the same anthocyanin superimposed on a primrose background. The hypothesis that the red anthocyanin is formed by the action of a reducing enzyme on a flavone glucoside (chromogen) is discussed.—*Geo. B. Rigg.*

2914. Steidle, Hans. **Ueber Vitamine und ihr Vorkommen in höheren Pilzen. [Vitamins and their presence in higher fungi.]** Zeitschr. Pilzkunde **4**: 45–48. 1925.—This is first a general comprehensive review of the occurrence, significance and classification of the vitamins. With respect to the vitamin content of the higher fungi few experiments have previously been made. According to Coward and Drummond, *Agaricus campestris* is very poor in vitamin A. On the contrary, the investigations of Orton, McCollum and Simmonds, di Mattei, as also those of Hara, show that different edible fungi contain antineuritic and growth-promoting substances. Vitamin C has not yet been found in fungi. The investigations mentioned were, however, carried out with dried or preserved (canned) material. Through drying and storing, as well as through canning, the most sensitive vitamin might, under certain conditions, be destroyed. The author therefore tested fresh *Cantharellus cibarius* and *Agaricus campestris* on a large series of guinea pigs, for vitamin C. An antiscorbutic action was in no case demonstrated. (See Biochem. Zeitschr. **151**: 181. 1924.—*Author (translated).*

2915. Takei, S. **Über Rotenon, ein wirksamer Bestandteil der Derriswurzel. (Derris elliptica Benth.). [Rotenon, an active constituent of Derris elliptica root.]** Biochem. Zeitschr. **157**: 1–15. 1925.—Rotenon was obtained by ether extraction of roots of *Derris elliptica.* Molecular weight determination and combustion indicated the formula $C_{19}H_{18}O_5$. Concentrated H_2SO_4 destroyed its toxic action. Various decomposition products were obtained by saponification, fusion, and oxidation.—*H. D. Hooker.*

2916. Wattiez, N. **Sur la presence de methyl-glucoside B dans les feuilles de Scabiosa succisa L. (Dipsacees). [The presence of methylglucoside B in the leaves of Scabiosa succisa.]** Bull. Soc. Chim. Biol. **7**: 917–924. 1925.—Bourquelot and Bridel in 1920 isolated a glucoside which they called scabioside from the root of this plant (see Bot. Absts. 12, Entry 5148). The aerial parts and especially the leaves, which are used in some portions of the Ardennes as a local application in pulmonary affections, contain another glucoside which has been isolated and purified. Its physical and chemical properties and elementary analysis indicate that it is methylglucoside B, which has not heretofore been found in nature. Scabioside was also present in the leaves.—*Joseph S. Caldwell.*

METABOLISM (NITROGEN RELATIONS)

2917. Burrell, R. C., and T. G. Philips. **The determination of nitrate nitrogen in plants.** Jour. Biol. Chem. **65**: 229–234. 1925.

2918. Bushey, A. **Some chemical characteristics of soft corn.** South Dakota Agric. Exp. Sta. Bull. 210. *713–718. 3 fig.* 1924.—The question of what constitutes soft corn is attacked

chemically. Four samples of frosted corn and one sample of early hailed corn, all more or less immature, are analyzed for proximate principles and types of protein. Proximate principles do not differentiate, but the protein fractions, while quite variable, do give some basis for discrimination and for an explanation of the unsatisfactory feeding results reported.—*E. J. Petry.*

2919. Dill, D. B., and C. L. Alsberg. **Preparation, solubility and specific rotation of wheat gliadin.** Jour. Biol. Chem. 65: 279–304. 1925.—Gliadin preparations of unusual purity have been obtained, and the methods used are described. Data are given on the solubility of gliadin in methyl and ethyl alcohol, and on the peptization of gliadin in these solutions at different temperatures. Data are also given on the specific rotation of gliadin at different temperatures and in different solvents.—*Geo. B. Rigg.*

2920. Gollman, A. **The combination of phenol red and proteins.** Jour. Biol. Chem. 64: 141–160. 1925.

2921. Jones, D. B., and F. A. Csonka. **Proteins of the cottonseed.** Jour. Biol. Chem. 64: 673–683. 1925.—Two globulins were isolated from these seed and their properties are listed and discussed. A pentose protein was also obtained and a small quantity of a substance having the properties of a glutelin. An attempt to isolate a nucleic acid gave negative results.—*Geo. B. Rigg.*

2922. Jones, D. B., and C. E. F. Gersdorff. **Proteins of wheat bran. II. Distribution of nitrogen, percentages of amino acid and free amino nitrogen: a comparison of the bran proteins with the corresponding proteins of wheat endosperm and embryo.** Jour. Biol. Chem. 64: 241–251. 1925.—Wheat bran proteins, in general, are characterized by a high content of the basic amino acids. The following percentages of amino acids were found: (1) In the prolamine, cystine 2.29, arginine 4.41, histidine 0.84, lysine 2.45, tryptophane 1.37, and tyrosine 3.38; (2) in the albumin, cystine 3.29, arginine 10.04, histidine 2.57, lysine 4.51, tryptophane 4.76 and tyrosine 4.20; and (3) in the globulin, cystine 1.52, arginine 14.13, histidine 2.76, lysine 11.84, tryptophane 2.85, and tyrosine 3.69.—Marked differences were found between the bran proteins and the corresponding proteins of the wheat embryo and endosperm, both with regard to their elementary composition, distribution of nitrogen, and amino acid content.—The significance of the so-called nutritionally essential amino acids found is pointed out with respect to the nutritive value of the bran proteins.—*Geo. B. Rigg.*

2923. Jones, D. B., C. E. F. Gersdorff, and O. Moeller. **Proteins of the bark of the common locust tree, Robinia pseudacacia. I. Enzymes associated with the proteins: the composition, properties, nitrogen distribution, and some of the amino acids of the albumin.** Jour. Biol. Chem. 64: 655–671. 1925.—From the air-dried inner bark of this tree there were isolated 2.52% of albumin and 1.38% of globulin, calculated on the basis of the moisture-free bark. A significant quantity of a substance having the properties of a proteose was also obtained. Proteins of the prolamin and glutelin type were absent. The mixed proteins obtained from this bark had enzymatic properties capable of decomposing urea and amygdalin. The enzymes were found to be associated with the globulin only. The following amino acids were found in the albumin: arginine, histidine, lysine, cystine, tyrosine, tryptophane, aspartic acid and glutaminic acid. Other properties of this protein are given. The protein of the bark of this tree has been reported by earlier workers to be poisonous. No tests as to the toxicity are reported in this paper.—*Geo. B. Rigg.*

2924. Levene, P. A., and B. J. C. van der Hoeven. **The concentration of vitamin B. II.** Jour. Biol. Chem. 65: 483–489. 1925.—The Osborne and Wakeman concentrate of yeast extract was further concentrated and a potent product was obtained, having an elementary composition approaching that of carbohydrates. Some of the potent preparations contained as little as 4% of nitrogen.—*Geo. B. Rigg.*

2925. Levene, P. A., and H. S. Simms. **The dissociated constants of plant nucleotides and nucleosides and their relation to nucleic-acid structure.** Jour. Biol. Chem. 65: 519–534. 1925.—The 15 dissociation constants of the 4 nucleotides which compose a plant nucleic acid molecule; and also the 7 constants of the 4 corresponding nucleosides have been determined, and their relation to the possible structure of the molecule is discussed.—*Geo. B. Rigg.*

2926. Sumner, J. B., and Viola A. Graham. **The globulin of the jack bean (Canavalia ensiformis). II. The content of cystine, tyrosine, and tryptophane.** Jour. Biol. Chem. 64:

257–261. 1925.—Improved methods for the purification of the 3 globulins, concanavalin, concanavalin A, and concanavalin B, are given. These 3 proteins have been studied in an attempt to show that the enzyme, urease, is or is not associated with an entirely different protein.—*Geo. B. Rigg.*

2927. Vickery, H. B. **Some nitrogenous constituents of the juice of the alfalfa plant. IV. The betaine fraction.** Jour. Biol. Chem. 65: 81–95. 1925.

2928. Vickery, H. B., and C. G. Vinson. **Some nitrogenous constituents of the alfalfa plant. V. The basic lead acetate precipitate.** Jour. Biol. Chem. 65: 91–95. 1925.—Experimental work indicates that appreciable amounts of amino acids are precipitated by basic lead acetate, hence this reagent should be used as a clarifying reagent for plant extracts with some caution.—*Geo. B. Rigg.*

METABOLISM (ENZYMES, FERMENTATION)

2929. Chrząszcz, T., Z. Bidzinski, und A. Krause. **Über den Einfluss der Wasserstoffionenkonzentration auf die Dextrinierung der Stärke durch gereinigte Malzamylase. [The influence of hydrogen-ion concentration on the dextrination of starch by purified malt amaylase.]** Biochem. Zeitschr. 160: 155–171. *1 fig.* 1925.—No fixed optimum H-ion concentration was found for the dextrination of starch by purified wheat-malt amylase. On raising the temperature from 20° to 75°C. the optimum changed from pH 4.4 to pH 5.4. Lowering the concentration of amylase or starch had the same effect as raising the temperature. The optimal zone of H-ion concentration is more restricted at higher temperatures (above 40°C.). At 60°C. a sharply defined optimum appeared at pH 5.0. The reaction velocity constant varied with the pH. Acetate buffer mixture increased dextrination velocity as much as 21–26%. The ratio of velocity constants and the temperature coefficient for a 10-degree temperature difference decreased with rise in temperature and approached the saccharification values. Amylase inactivation began above 30°C. Complete inactivation occurred only above 60°–65°C.—*H. D. Hooker.*

2930. Hugounenq, L., et J. Loiseleur. **Sur la constitution des diastases protéolytiques et le mécanisme de leur action. [The constitution of proteolytic enzymes and the mechanism of their action.]** Bull. Soc. Chim. Biol. 7: 955–973. 1925.—An enzyme consists of a colloidal organic complex and a mineral element, the organic complex constituting a colloidal support upon which the electrolyte is held by adsorption, retaining its crystalloid properties and specific chemical activity while the supporting complex retains colloidality. The electrolyte is specific, as Cl for pepsin, Mn for the oxidases, and the demineralization of the enzyme by dialysis inactivates it. The adsorption of the electrolyte is determined by the electrical sign of the protein micelle, and the sign is determined by the functional grouping in the molecule. In pepsin, acid groups predominate; in trypsin, NH_2 groups. The authors experimentally alter the functional groupings in pepsin and trypsin and in the proteins studied and determine the effects. Methylenisation with formol or denitrification with sodium nitrite does not affect the activity of pepsin, since the acid groups are not destroyed. Albumin which has been so treated as to remove its NH_2 groups in an alkaline medium is not attacked by pepsin, since it is through the NH_2 groups that the attack is made. Acetylated albumin is only slowly digested. Trypsin is totally inactivated by methylenisation, by sodium nitrite, or by picrolonic acid, since its NH_2 groups are thereby removed. Trypsin readily attacks albumin which has been acetylated or treated with formol. Pepsin consequently consists of a colloidal protein support having predominantly acid groups which determine its negative sign; it absorbs such cations as Na, setting free Cl which attacks the NH_2 groups of the proteins digested. Trypsin is a similar colloidal complex in which amidogenic groups predominate, giving the micellae positive charge; it consequently absorbs the CO_3 ion, setting free Na which combines with the acid groups of the proteins digested. Similar reasoning is applied to the mechanism of action of other enzymes.—*Joseph S. Caldwell.*

2931. Melin, E., and K. Helleberg. **Über die Aktivität von proteolytischen und verwandten Enzymen einiger als Mycorrhizenpilze bekannten Hymenomyceten. [The activity of proteases and related enzymes of some Hymenomycetes known to be mycorrhizal fungi.]** Biochem. Zeitschr. 157: 146–155. 1925.—In the fruiting bodies of *Russula rubra* proteases

were more active than nucleases. In *Boletus variegatus* and *Lactarius deliciosus*, proteases were less active than nucleases. In *B. luteus* both were very active; in *Amanita muscaria* activity was low for both enzymes; in *B. elegans* the enzymes showed moderate activity. Considerable variation was found also in urease and deamidase activity.—*H. D. Hooker.*

2932. Rosenow, L. P. **Neue Beiträge zur Frage über den Einfluss des Thyreoidins auf die alkoholische Gärung. II.** [**The influence of thyroidin on alcoholic fermentation.**] Biochem. Zeitschr. **160:** 269–271. 1925.—The major part of commercial thyroidin was insoluble and inactive. It contained in variable quantities an ingredient that stimulated alcoholic fermentation.—*H. D. Hooker.*

2933. Sandberg, M., and E. Brand. **On papain lipase.** Jour. Biol. Chem. **64:** 59–70. 1925.—Crude papain contains a lipase of considerable activity.—*Geo. B. Rigg.*

2934. Sendju, Yuzo. **Zur Kenntnis der vergleichenden Biochemie. I Mitteilung. Das Vorkommen der Arginase in verscheidenen Lebeswesen.** [**Contributions to comparative biochemistry. I. The occurrence of arginase in various organisms.**] Jour. Biochem. Tokyo **5:** 229–244. 1925.—The enzyme is present in *Aspergillus Oryzae* and in *Bacillus coli communis*. In the dog, in birds, and in fish (sea bass) it is present only in the kidney; in amphibia (toad) in the kidney and liver; in reptilia (turtle) in the kidney, liver, pancreas, and spleen.—*Joseph S. Caldwell.*

2935. Speakman, H. B. **The biochemistry of acetone formation from sugars by Bacillus acetoethylicum.** Jour. Biol. Chem. **64:** 41–52. 1925.—The fermentation of glucose, maltose, and glycerol by this organism has been studied from the point of view of the production of acetone and ethyl alcohol and a biochemical scheme for the production of those substances is postulated.—*Geo. B. Rigg.*

2936. Taubmann, G. **Auxowirkung eiweissfreier Kolloide auf die Harnstoffspaltung durch Soja-Urease.** [**Auxo action of protein-free colloids on urea cleavage by soybean urease.**] Biochem. Zeitschr. **157:** 98–102. 1925.—Gum arabic and starch acted as auxo bodies for soybean urease. Sucrose and lactose had no effect on urea cleavage.—*H. D. Hooker.*

METABOLISM (RESPIRATION)

2937. Andrews, F. M. **Quantitative estimation of aeration in leaves.** Proc. Indiana Acad. Sci. **38:** 268–270. 1922 [1923].—Observations are given on the comparative ease with which air can be caused to flow through leaves. It is stated that it required a vacuum of 16 mm. of mercury to cause the air to flow through the leaves of *Myriophyllum proserpinacoides*, but it flowed with much greater ease through the leaves of *Nymphea odorata*. In leaves of *Rumex obtusifolius* it required a vacuum of only 28 mm. of mercury to cause the air to flow through the stomata and out of the petiole.—*Edwin J. Kohl.*

2938. Cerighelli, R. **Sur la respiration des plantes vertes à la lumière. II. Interprétation des expériences de Garreau.** [**Respiration of green plants in light. II. Interpretations of the experiments of Garreau.**] Bull. Soc. Bot. France **71:** 653–656.—1924.—Green tissues placed in conditions favorable to assimilation, that is, in the light and at a temperature less than 30° do not liberate CO_2. The liberation of CO_2 noted by Garreau proceeds from non-assimilating tissues, in which respiration greatly exceeds assimilation (root, petiole, epidermis, etc.)—*C. E. Moore.*

2939. Kahn, Morton Charles. **Hydrogen sulphide production by anaerobic spore-bearing bacteria.** Jour. Bact. **10:** 439–447. 1925.

2940. Neuberg, C., und A. Gottschalk. **Über den Nachweis von Acetaldehyd als Zwischenstufe bei der anaeroben Atmung höheren Pflanzen.** [**Detection of acetaldehyde as an intermediary in the anaerobic respiration of higher plants.**] Biochem. Zeitschr. **160:** 256–260. 1925.—Peas and beans were germinated under sterile conditions. After 3–5 days the tissues were ground under aseptic conditions and mixed with sterilized glucose solution. Oxygen was excluded. After 3 days, ethyl alcohol and traces of acetaldehyde could be detected. In the presence of calcium sulphite, large yields of acetaldehyde were obtained and traces of alcohol.—*H. D. Hooker.*

2941. Stiles, H. R., W. H. Peterson, and E. B. Fred. **Fermentation products of certain mannitol-forming bacteria.** Jour. Biol. Chem. **64:** 643-654. 1925.—Four strains of mannitol-

forming bacteria have been isolated from cereals. These 4 strains are described and their characteristics and fermentation products are listed. The 1st of them ferments both xylose and arabinose; the 2nd, arabinose only; the 3rd, xylose only; and the 4th, neither. The pentose molecule is cleaved with the production of lactic and acetic acids. Other substances fermented by one or more of these organisms are glucose, fructose, galactose, mannose, sucrose, maltose, lactose, melibiose, trehalose, raffinose, melezitose, rhamnose, and calcium lactate.—*Geo. B. Rigg.*

ORGANISM AS A WHOLE

2942. Andrews, F. M. **Second Blooming of a snowball bush in the same year.** Proc. Indiana Acad. Sci. **38**: 270–271. 1922 [1923].—A 2nd period of bloom is noted in *Viburnum Opulus* on plants more or less diseased. A short discussion follows on physiological causes antecedent to a 2nd period of bloom.—*Edwin J. Kohl.*

2943. Cannon, William Austin, [and E. E. Free]. **Physiological features of roots, with special reference to the relation of roots to aeration of the soil, with a chapter on differences between nitrogen and helium as inert gases in anaerobic experiments on plants by E. E. Free.** Carnegie Inst. Washington. Pub. 368. *III + 168 p. 17 fig.* 1925.—This publication summarizes the results of experimentation in which the roots of the plants used were under temperature control and in which the partial pressure of oxygen in the soil air was known. Sand cultures were mainly employed. About 30 species were studied, including seedlings or cuttings of trees, shrubs, and annuals native to various types of habitats. Root growth ceases with approximately complete absence of oxygen in the soil around the roots. Whether roots of any species continue growth with low oxygen partial pressure in the soil around them depends partly on that partial pressure and partly on the soil temperature. The oxygen relation is to a degree specific, but the oxygen requirement is greater with higher soil temperatures than with lower ones. The variation of the oxygen requirement with soil temperature is greatest for species least tolerant of oxygen deficiency, and least for species with high degree of such tolerance. This supplies a means of defining the dependence of a species on the partial pressure of oxygen in the soil atmosphere, as well as a means of comparing species in this regard. Although nitrogen was generally used as the diluting gas, argon and helium were employed in some tests. It was found that argon acted like nitrogen but that the oxygen requirement for a given growth rate was less when helium was used as the other gas than when nitrogen was so used, other conditions being alike. This relation is discussed.—*Authors.*

GROWTH, DEVELOPMENT, REPRODUCTION

2944. Andrews, F. M. **The effect of pressure on growth.** Proc. Indiana Acad. Sci. **38**: 265–266. 1922 [1923].—It is stated that while roots of corn grow in length when submerged in water, their rate of growth decreases as the pressure increases. Roots of corn seedlings centrifuged at a force equal to a water column 30 m. high became clear in 15 minutes. Roots of corn seedlings 3 cm. long grew 2 mm. in water in 4 hours at 24°C. Roots of corn seedlings centrifuged under a water pressure of 30 m. grew only 1 mm. in 4 hours at 24°C. When roots of corn seedlings 2 cm. long were placed under water pressure of 50 atmospheres for 5 minutes at a favorable temperature, they grew to be 3.6 cm. long in sawdust in 24 hours while the control was 4 cm. long. In 3 days all were of the same size and vigor. When subjected to 100 atmospheres of pressure, roots 2 cm. long grew to be 3.2 cm. long after 24 hours while the controls were 4 cm. long. In 3 days all were of equal size and vigor. Further experiments at higher pressures gave the same general results.—*Edwin J. Kohl.*

2945. Versluys, Martha C. **The mode of growing of foliage-leaves, sheath-leaves and bulb-disc in Hyacinthus orientalis.** Rec. Trav. Bot. Neerlandais **22**: 1–108. *2 pl.* 1925.

2946. Wilson, Edwin B. **The logistic or autocatalytic grid.** Proc. Nation. Acad. Sci. [U. S. A.] **11**: 451–456. *5 fig.* 1925.—This publication illustrates coordinate paper which reduces to a straight line the autocatalytic curve $y = \frac{L}{1 + e^{-n(t-t_0)}}$ "where t_0 is the time at which the curve passes through its inflection when increasing from $y = 0$ at $t = -\infty$ to $y = L$, its limiting or saturation value, at $t = +\infty$." The use of the paper is illustrated by data for

growth of an epidemic. The method of determination of the constants from a straight line fitted to data is shown. The logistic curve is so similar to that for the probability integral that data are often indeterminate between them.—*Howard B. Frost.*

MOVEMENTS OF GROWTH AND TURGOR CHANGES

2947. Kreh, W. **Über den Einfluss der Schwerkraft auf der Entstehung die Dorsiventralität bei den Pilzhüten.** [**The effect of gravity on the development of dorsiventrality in mushrooms.**] Zeitschr. Pilzkunde **4**: 48–50. 1925.—Observations were made on fruit bodies of *Lenzites sepiaria* Wulf. from a horizontal trunk of *Picea excelsa*. The old fruit bodies were found with the lamellae turned upward, while the young ones were developed normally with the lamellae turned downward, due to turning of the trunk during the fruiting of the fungus. As an effect of the turning of the trunk, one side of some of the partially grown fruit bodies continued to develop, describing an angle of 180°, which resulted in the lamellae being oriented in the normal way. In some of the others, the upper surface which originally bore the lamellae became the true upper surface of the fruit body, while at the old upper surface which was directed downward, new lamellae arose.—Since gravity in these cases could cause a reversal in the dorsiventrality it seems reasonable to conclude that normal dorsiventrality is also the effect of gravity, as for example in the young broodbuds of *Marchantia polymorpha;* but while here dorsiventrality once induced remains unchanged, in the case of *Lenzites sepiaria* it can be altered by merely changing the direction of the gravity factor.—*Author* (*translated by Ernst Artschwager*).

GERMINATION, RENEWAL OF ACTIVITY

2948. Petry, E. J. **Germination and growth of Ceanothus americanus as affected by heated soils.** Rept. Michigan Acad. Sci. **22**: 135–143. *2 pl.* 1920 [1921].—Part I. Germination of seed of *Ceanothus americanus* L. from different habitats as affected by hand scarification and H_2SO_4 carbonization, in 3 different soils heated to 3 different temperatures, showed that rate of germination differs among different lots of seed, that hand scarification does not give consistent results, and that there is an acceleration of germination in the more toxic soils. Toxicity, as measured primarily by later growth, varied with the fertility of the soil, and the heat of sterilization, the most fertile soil being the most toxic, and the highest heat producing the greatest toxicity in all the soils used. Forty-nine graphs are given, showing rates of germination under different conditions. Initial acceleration of germination was noted in the higher toxicities.—Part II. Further growth of seedlings depended upon the relationship of heat applied to the soil of germination with the heat applied to the soil of transplantation. Transplanting from a highly heated to successively less highly heated soil gave successively lower death rates of transplants, while the reverse order resulted in the death of many seedlings. Non-transplants suffered less damage in general, and successively less as the temperature of soil treatment diminished. The results are attributed to some type of immunity, accommodation, or endurance to toxic bodies and concentration of solutes, acquired by the embryo as it expands during sprouting. *Author.*

REGENERATION

2949. Lek, Hendrick Adrianus Abraham van der. **Over de wortelvorming van houtige stekken.** [**Root development in woody cuttings.**] (English summary.) *230 p. 25 pl.* H. Veenman & Zonen; Wageningen, 1925.—Root-formation was studied in cuttings (mostly 1 year-old branches) of *Ribes nigrum,* some species of *Salix* and *Populus,* and *Vitis vinifera.* Special attention was paid to the anatomical structure of the cuttings, especially to the "root-germs" and their location with regard to the medullary rays and the lenticels; the symptoms of polarity, and the correlation between the development of the aerial part and the root system; and the influence of the buds on root-formation. Endogenous, strongly polar, root formation is connected with a hormone moving downward regularly through the phloem. Exogenous stem formation (from bark, epidermis, or callus), not being polar, is in no connection with such a movement. The basal end of cuttings shows a much greater capacity than the apical one for forming regenerated organs, and the tendency to root formation is much

more widely spread than the disposition to form sprouts. The presence of a bud on the cutting strengthens the "aptitude for rooting" all over the internode below the bud. The development of the bud into a sprout stimulates the growth of roots, their branching, and the formation of root-hairs. The roots assume their normal characters under this influence. Root formation is influenced in a stronger degree by the portion of the plant above the earth than the reverse.—*C. S. Gager.*

2950. Wallace, T., and H. P. Hutchinson. **Note on the development of root systems of willow cuttings in nutrient solutions.** Univ. Bristol Ann. Rept. Agric. & Hort. Res. Sta. *P. 25–29.* 1924.—Willow (*Salix triandra*) cuttings were grown with the ends in nutrient solutions, the different solutions being: complete, pH 6.8; complete, pH 3.0; complete, less N; complete, less K; complete, less P; complete, less Ca; complete, less Mg; and distilled water only. Shoot growth was good with both complete solutions and with Mg omitted. It was poor in all others. When K or Ca was omitted the growth of primary roots was somewhat reduced and was long and slender with very little growth of secondary or fibrous roots. This reduction in fibrous root formation caused by deficiency of K and by deficiency of Ca had been noted previously with apple trees in sand culture. Omission of P reduced root growth but did not reduce the growth of primary roots more than that of secondary fibrous roots. At first the omission of Mg did not seem to reduce root growth. But at intervals all roots were pruned off; and, while in the complete solutions new roots formed very satisfactorily after each pruning, in the solution lacking Mg the plants were practically killed by the 2nd root pruning.—*W. H. Chandler.*

RADIANT ENERGY RELATIONS

2951. Ancel, S. **Action de faibles doses de rayons X sur des graines sèches. [The action of weak doses of X-rays on dry seed.]** Compt. Rend. Soc. Biol. **91**: 1435–1436. 1924.—Researches on 2 species of *Phaseolus*, *Lens esculata*, *Brassica napus*, *Lepidium sativum*, and *Panicum miliaceum*, using more than 16,000 seed, show that X-rays applied to the dry seed in doses varying from $\frac{1}{12}$ to 20 units do not hasten germination.—*Oran Raber.*

ELECTRICITY AND MECHANICAL AGENTS

2952. Kleiber, M. **Beitrag zur Frage der Einwirkung elektrischer Ströme auf Mikroorganismen. [The action of electric currents on micro-organisms.]** Biochem. Zeitschr. **160**: 312–324. 1925.—No specific electric effect on yeast cells was detected. Alternating current has no effect. The destruction of yeast by direct current is attributed to an alteration of the wort.—*H. D. Hooker.*

MISCELLANEOUS

2953. Anonymous. **[Clarification of cane juice.]** South African Sugar Jour. **9**: 471. 1925.—In connection with efforts to clarify cane juice by the use of ammonia instead of lime, it was shown in the laboratory that lime is necessary for the precipitation of the phosphoric acid present in the raw juice, but that adjustment to the optimum alkalinity with ammonia is an improvement as regards the removal of magnesium salts. This procedure, however, did not give satisfactory results in the factory, because, although settling was always good, there was a considerably increased amount of mud to be handled and the benefits did not outweigh the increased cost.—*Nellie E. Fealy.*

2954. Anonymous. **The carbonatation process.** South African Sugar Jour. **9**: 433. 1925.—The Natal Estates Ltd. experimented with its carbonatation process for a number of years and may be said to have perfected it 2–3 years ago. The chief difficulty in connection with this process is the large amount of limestone it requires, that is, about $\frac{2}{3}$ of a ton per ton of sugar manufactured, or 10,000 tons for a factory manufacturing 15,000–16,000 tons of sugar. Unquestionably the carbonatation process is by far the most effective for dealing with the refractory Uba cane juices, and if suitable limestone could be obtained within 100 miles of a factory this process would doubtless be largely adopted in Natal.—*Nellie E. Fealy.*

2955. Järvinen, K. K. **Zur Bestimmung des Schwefeldioxyds in Nahrungsmitteln. [Determination of sulphur dioxid in foodstuffs.]** Zeitschr. Untersuch. Nahrungs- u. Genussmittel **49**: 283–286. 1925.

2956. Tillmans, J. **Über die Bestimmung der Aschenalkalität in Lebensmitteln.** [**Determination of alkalinity of ash in foodstuffs.**] Zeitschr. Untersuch. Nahrungs- u. Genussmittel 49: 263–270. 1925.

2657. Ventre, Jules. **Du role de l'acidité réelle dans la préparation et la conservation des vins.** [**The rôle of Hydrogen-ion concentration in the preparation and conservation of wines.**] Ann. École Nation. Agric. Montpellier n.s. 18: 89–236. [1925?]

TAXONOMY OF VASCULAR PLANTS

J. M. Greenman, *Editor*
E. B. Payson, *Assistant Editor*

(See also in this issue Entries 2173, 2186, 2212, 2561, 2767)

GENERAL

2958. Anonymous. [Rev. of: Hoffman, Julius (Translated by E. S. Barton (Mrs. A. Gepp). **Alpine flora for tourists and amateur botanists; with text descriptive of the most widely distributed and attractive alpine plants.** *new ed. xiv + 121 p., 43 pl.* Longmans, Green & Co.: London, 1925.] Nature 116: 237–238. 1925.

2959. Jávorka, Sandor. **Magyar Flóra (Flóra Hungarica).** [**Flora of Hungary.**] Vol. 3. *P. 801–1307.* Edit. "Studium:" Budapest. 1925.—This volume begins with the genus *Arctostaphylos* of the Ericaceae, continues through the successive families, and ends with *Hieracium* of the Compositae. A separate brochure, pages I–CII, issued simultaneously with the 3rd volume, contains a general title-page, introduction, a chapter on gross morphology, ecological data, abbreviations used in the work, a list of botanical authors and a map of Hungary, and completes the work.—(See also Bot. Absts. 15, Entry 1209.) *J. M. Greenman.*

2960. Prodan, Iuliu. **Flora pentru determinarea si descrierea plantelor ce cresc in Romania.** [**Flora for the determination and description of the plants which grow in Rumania.**] Vol. 1. *CXXVI + 1152 p. 89 pl., 25 fig.;* vol. 2. *229 p. 130 pl. 37 fig., 3 maps.* Institut de Arte Grafice, Cartea Romaneasca: Cluj, 1925.—This flora embraces the vascular cryptogams and flowering plants of Rumania. The 1st volume is concerned with a systematic treatment of the plants, and for their identification ample keys and descriptions are provided. The 2nd volume presents primarily a detailed consideration of the phytogeography of Rumania. The following 3 botanical regions are recognized: (1) Regiunea alpină; (2) Regiunea pădurilor; (3) Regiunea stepelor. These regions are variously subdivided and the characteristic vegetation of each is given. Maps and copious illustrations of plants elucidate the text. —*J. M. Greenman.*

PTERIDOPHYTES

2961. Clarkson, E. H. **Spinulose ferns of Tim Pond, Maine.** Amer. Fern Jour. 15: 22–23. 1925.—The author reports the finding of *Dryopteris dilatata* var. *americana, D. intermedia,* and *D. spinulosa.—E. R. Walker.*

2962. Corne, F. E. **Fragrant Massachusetts fern.** Amer. Fern. Jour. 15: 21–22. 1925. —The author reports a fragrant form of *Aspidium simulatum* from the vicinity of Marion, Massachusetts.—*E. R. Walker.*

2963. Maxon, W. R. **Notes on American ferns—XX.** Amer. Fern Jour. 15: 16–19. 1925. —*Cheilanthes alabamensis* (Buckl.) Kunze, *C. castanea* Maxon, and *Selaginella neomexicana* Maxon are reported from New Mexico; and *Cheilanthes aemula* Maxon is reported from Texas. —*E. R. Walker.*

SPERMATOPHYTES

2964. Anonymous. **Vermischte neue Diagnosen.** [**Various new diagnoses.**] Repert. Spec. Nov. Regni Veg. 18: 43–45. 1922. (Repert. Eur. et Med. 1: 475–477. 1922.)—The following species, varieties, etc., from Bosnia and Herzegovina, published originally in Glasnek Muz. Bosn. Herceg. 31: 62–75. 1919, are here redescribed: *Alectorolophus rumelicus* (Vel.) Borb. subsp. *rumelicus* (Vel.) var. *mostarensis* Maly, *Angelica brachyradia* Freyn var. *plani-*

nensis Maly, *A. illyrica* Maly (*A. Pancicii* Vand. var. *illyrica* Maly), *Centaurea deusta* Ten. var. *nobilis* (Grov.) Maly (*C. deusta* var. *Rigoi* Hal.), *Crataegus monogynus* Jacq. var. *rosiformis* (Janke) f. *liocarpa* Maly, *Euphrasia liburnica* Wettst. subsp. *bosnensis* Maly, *Gentiana austriaca* A. & J. Kerner subsp. *lutescens* (Vel.) Wettst. α *typica* Maly (*G. lutescens* Vel. var. *ionantha* Borb.), β *albiflora* Maly (*G. lutescens* Vel. f. *albiflora* Adam.), *Heracleum Orsini* Guss. α *typicum* Maly and β *hypoglaucum* Maly, *H. spondylium* L. var. *chloranthum* (Borb.) Maly f. *involucratum* Maly, and *Iris varbossania* Maly.—*John E. Dinsmore.*

2965. Ashe, W. W. **Notes on woody plants.** Charleston [South Carolina] Mus. Quart. 1: 28–32. 1925.—The following hybrid, species, and combinations, with notes in several cases, are proposed as new: *Robinia oconeensis* (apparently a hybrid between *R. pseudoacacia* and one of the shrubby, rose-flowered species), *Hicoria glabra similis* (*H. similis* Ashe), *H. alba ovoidea* (*Carya alba ovoidea* Sarg.), *H. alba anomala* (*Carya* Sarg.), *H. ovata ellipsoidalis* (*Carya* Sarg.), *H. ovalis borealis* (*H. borealis* Ashe), *H. ovalis vestita* (*Carya ovalis obcordata* f. *vestita* Sarg.), *H. ovata complanata* (*Carya* Sarg.), *H. cordiformis latifolia* (*Carya* Sarg.), *H. glabra acuta* (*H. porcina acuta* Sarg.), *H. glabra reniformis* (*H. porcina reniformis* Ashe), *H. Buckleyi arkansana* (*Carya arkansasa* Sarg.), *H. Buckleyi villosa* (*H. glaba villosa* Sarg.), *H. Buckleyi pachylemma* (*Carya Buckleyi arkansana* f. *pachylemma* Sarg.), *H. Brownii* (*Carya Brownii* Sarg.), *H. Brownii varians* (*Carya Brownii* f. *varians* Sarg.), *Crataegus sabineana, Castanea alabamensis, C. floridana margaretta* (*C. margaretta* Ashe), *C. floridana arcuata* (*C. margaretta* var. Ashe), *C. floridana angustifolia* (*C. margaretta* var. Ashe), *Ilex opaca arenicola* (*I. arenicola* Ashe), *Tilia porracea, T. hypoleuca, T. floridana alabamensis* (*T. alabamensis* Ashe), *Polycodium interius.* Notes are given on a plant believed to be *Polycodium Langloisii* Greene.—*C. A. Ludwig.*

2966. Becker, Wilh. **Viola persicifolia Roth × rupestris Schm. hybr. nov. = V. vilnaensis.** Repert. Spec. Nov. Regni Veg. 18: 477–478. 1922. (Repert. Eur. et Med. 1: 557–558. 1922.) —A description is given of this new hybrid from Vilna in Poland.—*John E. Dinsmore.*

2967. Becker, Wilh. **Zur Veilchenflora Bulgariens. [The violets of Bulgaria.]** Repert. Spec. Nov. Regni Veg. 18: 141–142. 1922. (Repert. Eur. et Med. 1: 493–494. 1922). —Five species are listed, of which one has a new name: *V. Jordani* × *Riviniana* (*V. bulgarica* W. Bckr. = *V. silvestris* × *Vandasii* W. Bckr. = *V. provincialis* × *silvestris* W. Bckr.).—*John E. Dinsmore.*

2968. Becker, Wilh. **Zwei neue Euphrasia-Formen aus Tirol. [Two new forms of Euphrasia from the Tyrol.]** Repert. Spec. Nov. Regni Veg. 18: 475–477. 1922. (Repert. Eur. et Med. 1: 555–557. 1922.)—Careful comparisons of the 3 following are given: *Euphrasia minima* Jacq., *E. Markgrafii* W. Bckr. (*E. Mattfeldii* × *minima*), and *E. Mattfeldii* W. Bckr. —*John E. Dinsmore.*

2969. Beck-Mannagetta, G. **Orobancheae novae. [New Orobanche plants.]** Repert. Spec. Nov. Regni Veg. 18: 33–40. 1922. (Repert. Eur. et Med. 1: 465–472. 1922.)—The following new species, subspecies, varieties, forms, and combinations are described: *O. nana* Noë subsp. *melitensis; O. nana* Noë f. *aragonensis; O. rosmarina* (*Trionychion rosmarinum* Welw.); *O. Muteli* Schultz var. *nigrescens; O. lavandulacea* Reich. f. *luxuriosa; O. oxyloba* G. Beck f. *septemloba; O.* (*Trionychon*) *caucasica; O. arenaria* Borkh. f. *personata; O. amoena* C. A. Meyer f. *Dzejveri,* and f. *afghana; O. Teucrii* Holandre f. *variisepala; O. lutea* Baumg. f. *evanida,* and f. *liburnica; O. major* L. f. *moravica,* and f. *hypochoeridis* (*O. ritro* Gren. & Godr. var. *hypochoeridis* G. C. Druce); *O. flava* Mart. f. *Adenostylidis; O. Salviae* F. G. Schultz f. *bosniaca; O. rigens* Loiseleur f. *corsica,* and var. *nigricans; O. gracilis* Smith f. *humilis,* f. *filiformis,* f. *latiloba,* f. *brevissima,* f. *ingens,* f. *albo-violacea,* and var. *Wagneri; O. sanguinea* Presl f. *loriformis; O. alba* Steph. f. *ampla,* f. *ingens,* f. *areschensis,* and f. *viscidula; O. Haenseleri* Reuter var. *deludens; O. reticulata* Wallr. f. *Cephalariae; O. crenata* Forsk. f. *gracillima; O.* (*Osproleon*) *Owerini* (*O. crenata* β *Owerini* Beck), and var. *Woronowii; O. Clausonis* Pomel f. *parviflora; O. versicolor* Schultz f. *corcyrensis; O. minor* Sutt. f. *albens;* and *O. Hederae* Duby f. *immaniflora.*—*John E. Dinsmore.*

2970. Beck-Mannagetta, G. **Plantae europaeae hactenus non indicatae. II. [European plants not before described. II.]** Repert. Spec. Nov. Regni Veg. 18: 129–132. 1922. (Repert. Eur. et Med. 1: 481–484. 1922.)—The following new forms and varieties, chiefly from Austria and Herzegovina, are described: *Sedum acre* L. var. *genuinum* Godr. f. *grandi-*

florum and f. *fastigiatum*, var. *imbricatum; Sedum annuum* L. f. *brachysepalum*, var. *alpinum; Sedum glaucum* W. K. f. *glabrum; Sempervivum Schlehani* Schott var. *dinaricum; Saxifraga rotundifolia* L. subsp. *eurotundifolia* Engl. Irmsch. f. *glabrescens*, f. *crenifolia*, f. *micrantha; Saxifraga tridactylites* L. var. *crucifolia; Saxifraga Blavii* G. Beck f. *minor*, f. *tenerrima; Saxifraga aizoon* Jacq. subsp. *euaizoon* Engl. Irmsch. subvar. *vranicensis* f. *globularis; Ribes alpinum* L. var. *alpicola* f. *glabrescens*, f. *microphyllum*, var. *montanum*, f. *paucidentatum; Ribes chimaeron* (*aureum* + *grossularia* var. *uva crispi*) Beck n. chim.—*John E. Dinsmore.*

2971. Blaringhem, L. **Sur les caractères d'espèces élémentaires d'Orges (Hordeum).** [**The characters of the elementary species of Hordeum.**] Bull. Soc. Bot. France **71**: 623–627. 1924.—The author discusses the taxonomic value of the characters "awns smooth," and "nodes long" and "nodes short" in describing species of *Hordeum.*—*C. E. Moore.*

2972. Bois, D., et Potier de la Varde. **Arabis alpina L. var. roseiflora (var. nov.).** Bull. Soc. Bot. France **71**: 546–548. 1924.—A variety of *Arabis alpina* L. from the Jardin d'Avranches is described as var. *roseiflora* n. var., to distinguish it from *A. rosea* DC.—*C. E. Moore.*

2973. Bonati, G. **Scrofulariacées nouvelles de l'Indo-Chine.** [**New Scrophulariaceae from Indo-China.**] Bull. Soc. Bot. France **71**: 1091–1100. 1924.—The following plants published by Bonati are described: *Brandisia scandens*, scandent shrub or liana collected in Annam at 1200 m. altitude; *B. Chevalieri* at 1400 m. altitude in Annam; *B. annamitica*, creeping liana at 3 m. in length, with rough and brittle branches, from Annam; *Torenia Poilanei* of Cochin, China, a creeping herb with very beautiful flowers making it a beautiful ornamental plant; *T. annamitica*, Annam, a creeping herb found on a forest path; *T. albo-violacea*, a creeping plant of 60–80 cm. in length; *T. scandens*, scandent plant on clayey soil from which the forest has been cleared and which has been invaded by brush, found in Annam at 1450 m. altitude; *T. Chevalieri*, semi-scandent plant collected in a forest at about 200 m. altitude, in a place where the forest was more open; *T. Hayatae; T. albomarginata*, from Annam, a creeping plant of about 70 cm. in length, in the sand, valley of Sông-Mau; *T. Evrardi*, in a wooded ravine, Tonkin; **Ourisianthus** n. gen., *O. caeruleus*, on clayey soil, Annam; *Adenosoma debilis*, open prairies, Tonkin; *Centranthera Chevalieri; Linderbergia Peteloti*, related to *L. urticaefolia* Lehm.—*H. des Gayets* (*translated by E. B. Payson*).

2974. Bornmüller, J. **Fritillaria macedonica Bornm.** (**spec. nov.**). Repert. Spec. Nov. Regni Veg. **19**: 200–202. 1923. (Repert. Eur. et Med. **1**: 600–602. 1923.)—A description of this new species, from the Ochrida Lake region in Macedonia, is given.—*John E. Dinsmore.*

2975. Bornmüller, J. **Micromeria Kuegleri Bornm.** (**sp.n.**), **eine neue Art von Teneriffa.** [**Micromeria Kuegleri Bornm., a new species from Teneriffe.**] Repert. Spec. Nov. Regni Veg. **19**: 197–199. 1923. (Repert. Eur. et Med. **1**: 597–599. 1923.)—Description and notes are given for this new species.—*John E. Dinsmore.*

2976. Bornmüller, J. **Neues und Bemerkenswertes über Verbascum-Arten Mazedoniens.** [**New and noteworthy species of Verbascum from Macedonia.**] Repert. Spec. Nov. Regni Veg. **18**: 133–141. 1922. (Repert. Eur. et Med. **1**: 485–493. 1922.)—Three new species and one subspecies are described in full, namely: *Verbascum pachyurum, V. scardicolum, V. adenanthum*, and *V. gloeotrichum* Hausskn. & Heldr. subsp. *doiranense* Bornm. with var. *microcalycinum.* Critical notes are given of these: *V. Dieckianum* Borb. & Degen and its var. *integrifolium* Bornm., *V. malacotrichum* Boiss. & Heldr., and *V. Heldreichii* Boiss.—*John E. Dinsmore.*

2977. Bornmüller, J. **Über eine neue Aristolochia aus Mazedonien.** [**A new Aristolochia from Macedonia.**] Repert. Spec. Nov. Regni Veg. **19**: 195–197. 1923. (Repert. Eur. et Med. **1**: 595–597. 1923.)—A description is given in Latin of this new species, *A. melanoglossa* (*A. pallida* W. *β melanoglossa* Bornm. in exsicc.).—*John E. Dinsmore.*

2978. Bornmüller, J. **Über eine neue Tulpe der Flora Mazedoniens.** [**A new tulip from Macedonia.**] Repert. Spec. Nov. Regni Veg. **19**: 199–200. 1923. (Repert. Eur. et Med. **1**: 599–600. 1923.)—This is a description in Latin of *Tulipa scardica* from the Scardian district in Macedonia.—*John E. Dinsmore.*

2979. Bornmüller, J. **Zur Gattung Centaurea der mazedonischen und kleinasiatischen Flora.** [**The genus Centaurea in Macedonia and Asia Minor.**] Repert. Spec. Nov. Regni Veg. **19**: 99–104. 1923. (Repert. Eur. et Med. **1**: 579–584. 1923.)—These new species and varie-

ties are described in Latin: *Centaurea Finazzeri* Adamovič var. *araneosa*, and var. *majoriceps; C. Trojana*, from the Troad; and *C. rufidula*, from Central Macedonia.—*John E. Dinsmore.*

2980. Bornmüller, J. **Zur Verbascum-Flora Mazedoniens.** [**Verbascum in Macedonia.**] Repert. Spec. Nov. Regni Veg. **19**: 97–99. 1923. (Repert. Eur. et Med. **1**: 577–579. 1923.)—Two new species of *Verbascum* from Macedonia are described in Latin, namely: *V. Herzogii* and *V. Burgeffii.*—*John E. Dinsmore.*

2981. Bush, B. F. **A new Viburnum.** Amer. Midland Nat. **9**: 192–194. 1924.—*Viburnum Ashei* is described as a new species from southern Mississippi.—*Sister M. Ellen.*

2982. Camus, Aimée. **Andropogonées nouvelles de Madagascar.** [**New Andropogoneae from Madagascar.**] Bull. Soc. Bot. France **71**: 921–924. 1924.—The following new species are described by A. Camus: *Dicanthium andringitrense*, central Madagascar, Massif de l'Andringitra, from 1800–2000 m. altitude, *Andropogon Perrieri*, eastern Madagascar below 400 m. altitude; *A. ivohibensis*, central Madagascar at 1000 m. altitude; *Schizachyrium ambalavense*, central Madagascar, about 1200 m. altitude; *Heteropogon betafensis*, central Madagascar, rare, 1600 m. altitude.—*L. Faucheron* (*translated by E. B. Payson*).

2983. Camus, Aimée. **Espèces nouvelles de Dimeria Malagaches.** [**New Madagascan species of Dimeria.**] Bull. Soc. Bot. France **71**: 1060–1162. 1924.—The genus *Dimeria* is distributed in eastern Asia and in Oceania but up to now had not been recorded from Madagascar nor from the African continent. Madagascar has become the western limit of the distribution of the genus. M. Perrier de la Bâthie has reported *D. Perrieri* from the falls of Ikopa, between Medelanana and Andriba (western Madagascar) and from the granitic rocks of Mt. Ambohibenga. He collected *D. manogarivensis* on the moist gneissic rocks on the mountain mass of Manogarivo (central Madagascar) at an altitude of about 1000 m. *D. madagascariensis* was found on the moist granitic rocks of Mt. Ambohibenga (western Madagascar). *D. Perrieri* is distinguished from all described species of *Dimeria* by its large spiklets arranged in 2 rows, by its lower empty glume and by its slightly mucronate upper glume. *D. manongarivensis* is a weak, slender plant with few, slender roots, a stem slightly branched only at the base. *D. madagascariensis* has glumes of which the keel and apex bear characteristic white hairs.—*H. des Gayets* (*translated by E. B. Payson*).

2984. Camus, Aimée. **Espèces nouvelles d'Erianthus malgaches.** [**New species of Erianthus from Madagascar.**] Bull. Soc. Bot. France **71**: 1182–1183. 1924.—The author describes 2 species of *Erianthus* quite distinct from the known ones: *E. Perrieri*, collected by M. Perrier de la Bâthie on the basaltic rocks of Betafo (Central Madagascar) and *E. Viguieri* also collected in Madagascar by Viguier and Humbert. This last species grows in the province of Itasy on the grassy slopes of the west flank of Ankaratra between Ambatofotsy and Tsifajavona.—*H. des Gayets* (*translated by E. B. Payson*).

2985. Camus, Aimée. **Hickelia et Pseudocoix, genres nouvéaux de Bambusées malgaches.** [**Hickelia and Pseudocoix, new genera of Madagascan bamboos.**] Bull. Soc. Bot. France **71**: 899–906. *29 fig.* 1924.—*Hickelia madagascariensis* has been found in the central part of Madagascar in the forest of Ambatofitorano, to the south of Ambositra and at an altitude of 1600 m. by M. Perrier de la Bâthie. This is a slender bamboo, climbing the very small hanging branches. The fruits only develop well under the thickest cover. Formerly they served as food for the natives in times of want. Now the lemurs make good use of them. *Pseudocoix Perrieri* is also found in central Madagascar on Mt. Tsaratanana in a forest where the undergrowth had been burnt and between an altitude of 2000 and 2400 m. This is a subscandent bamboo of which the stems do not become more than 6 cm. in diameter but may become 40–60 m. or more long. These stems, which are supported by the neighboring trees and shrubs, fall down on every side and bear at the level of their nodes, whorls of little branches, bent and glabrous.—*H. des Gayets* (*translated by E. B. Payson*).

2986. Camus, Aimée. **Le Schizostachyum Perrieri—Bambou nouveau de Madagascar.** [**Schizostachyum Perrieri—a new bamboo to Madagascar.**] Bull. Soc. Bot. France **71**: 780–782. 1924.—Perrier de la Bâthie has found this bamboo in the central part of Madagascar on Mt. Tsaratanana, from 2,000 m. altitude to the summit. This species presents marked affinities only with *S. parvifolium* Munro, of Madagascar and of Nossi-Be. The existence of the genus *Schizostachyum* in this island when it seems to be lacking on the African continent shows

one relationship the more between the Madagascan flora and the flora of Indo-Malaysia. The genus *Schizostachyum* seems to have its center of dispersion in Malaysia. Madagascar is probably the western limit of this genus.—*H. des Gayets (translated by E. B. Payson).*

2987. Camus, Aimée. **Un Urelytrum nouveau de Madagascar.** [**A new Urelytrum from Madagascar.**] Bull. Soc. Bot. France **71**: 1090–1091. 1924.—On the rocky slopes of Mt. Belambana about 1600 m. altitude and in the Cretaceous sandstones between Ranobe and Meninyoza, M. Perrier de la Bâthie found a Madagascan *Urelytrum*. This species approaches, in certain characters, *U. coronulatum* Stapf., a species of the region of Nil. The other species of *Urelytrum*, all African, are easily distinguished from *U. madagascariense* by the number of spiciform racemes, a very constant character in this group. The former have 5, the latter have very numerous ones.—*H. des Gayets (translated by E. B. Payson).*

2988. Camus, E. G., et A. Camus. **Un nouvel hybride d'Orchis.** [**A new hybrid orchid.**] Bull. Soc. Bot. France **71**: 570–571. 1924.—*Orchis Cortesii* E. G. Camus & A. Camus (*O. longicornu* × *Morio* E. G. Camus & A. Camus) from the vicinity of Bonifacio, Corsica, and published originally in the Icon. Orch. Eur., p. 4, 1921, is redescribed in French and in Latin.—*C. E. Moore.*

2989. De Wildeman, É. **Addition a la Flore du Congo.** [**Additions to the flora of the Congo.**] Bull. Jard. Bot. État Bruxelles **6**: 1–30. *Pl. 1–35.* 1919.—This paper grew out of the determination of a great number of plants from the Congo as well as of a few from other African regions. In the 1st part the following new species and new names of species of Gramineae are proposed: *Cymbopogon acutispathaceus* Pl. 27; *C. Bequaerti* (*Andropogon Bequaerti* De Wild.) Pl. 26; *C. kapandensis* (*A. kapandensis* De Wild.) Pl. 28; *C. luembensis* (*A. luembensis* De Wild.) Pl. 25; *C. modicus* (*A. modicus* De Wild.) Pl. 27; *C. pilosovaginatus* (*A. pilosovaginatus* De Wild.) Pl. 24; *C. scabrimarginatus* (*A. scabrimarginatus* De Wild.) Pl. 24; *C. subcordatifolius* (*A. subcordatifolius* De Wild.) Pl. 26; *C. Vanderysti* (*A. Vanderysti* De Wild.) Pl. 25; *Andropogon argento-pilosus* Pl. 28; *A. Bavichii* Pl. 29; *A. Brieyi.* Pl. 29, 30; *A. Dewevrei.* Pl. 31; *A. emarginatus* Pl. 31; *A. Homblei* Pl. 32; *A. Ringoeti* Pl. 32; *Aristida Hocki* Pl. 35; *A. Vanderysti* Pl. 35; *Tristachya Bequaerti* Pl. 35 & var. *Vanderysti; T. Hocki* Pl. 34; *T. Homblei* Pl. 33; *T. leucothrix* var. *Bolusi; T. Ringoeti; T. Vanderysti* Pl. 33; *Eragrostis articulata* Pl. 2; *E. Bequaerti* Pl. 6; *E. densa* Pl. 3; *E. elongato-compressa* Pl. 1; *E. Flamignii* Pl. 1; *E. Hocki* Pl. 4; *E. Homblei* Pl. 3; *E. longepaniculata* Pl. 2; *E. manikensis* Pl. 5; *E. purpureo-pedicellata* Pl. 6; *E. Vanderysti* Pl. 47.—The 2nd part deals with members of the Orchidaceae. Two genera, *Lissochilus* and *Eulophia* are reviewed. The novelties are as follows: *Lissochilus Corbisieri* Pl. 15; *L. Descampsii* Pl. 16; *L. faradjensis* Pl. 12; *L. Homblei* Pl. 13; *L. kapandensis* Pl. 13; *L. katencaniensis* Pl. 14; *L. kisanfucnsis* Pl. 17; *L. Laurentii* Pl. 19; *L. Sapini* (*Eulophia Sapini* DeWild.) Pl.15 *L. subintegrus* Pl. 9; *L. vermiculatus* (*Eulophia vermiculata* De Wild.) Pl. 12. The forms of a certain number of other species are illustrated, in particular those of *L. giganteus* and *L. roesus.* New species and new names in *Eulophia* are: *E. angustilabellata* Pl. 23; *E. Debcersti* Pl. 17; *E. elamellata* Pl. 18; *E. gumbariensis* Pl. 22; *E. Hocki* Pl. 22; *E. katangensis* nom. nov. (*Lissochilus katagensis*) Pl. 16; *E. paucisquamata* Pl. 23; *E. sankisiensis* Pl. 21; *E. trilamellata* Pl. 21. The other species have also been illustrated.—*Author (translated by E. B. Payson).*

2990. De Wildeman, É. **Matériaux pour la Flore forestière du Congo belge I.** [**Materials for the forest flora of the Belgian Congo. I.**] Ann. Soc. Sci. Bruxelles **43**: 401–413. 1924.—The author reviews certain types of the genus *Pterocarpus* (Leguminosae) and describes the following species: *Pterocarpus Casteelsi, P. Claessensi, P. Delevoyi, P. elisabethvillensis, P. Gilleti.—Author (translated by E. B. Payson).*

2991. De Wildeman, É. **Notes sur le Strephonema Gilleti De Wild. Plante oléagineuse du Congo.** [**Notes on Strephonema Gilleti De Wild. An oil producing plant of the Congo.**] Bull. Jard. Bot. État Bruxelles **8**: 119–124. *Pl. 3.* 1923.—This is a species from the region of Kisantu (Lower Congo) of the Combretaceae. It was collected by J. Gillet, S. J. His chemical study had been partially made in 1915 at the Imperial Institute of London. The author briefly passes in review the other species of the genus, which are comparatively few in number.—*Author (translated by E. B. Payson).*

2992. De Wildeman, É. **Sur quelques Faurea du Congo Belge.** [**Certain species of Faurea from the Belgian Congo.**] Ann. Soc. Sci. Bruxelles **43**: 232–241. 1924.—Enumeration

of some African species of *Faurea* with notes on the geographical distribution and descriptions of *F. Delevoyi* (Katanga) and *F. Gilleti* (Lower Congo.)—*Author (translated by E. B. Payson).*

2993. De Wildeman, É. **Sur une Alchemille nouvelle de la flore de Madagascar: Alchemilla andringitrensis Viguier et De Wildeman.** [**An Alchemilla new to the flora of Madagascar: Alchemilla andringitrensis Viguier and De Wildeman.**] Bull. Soc. Linn. Normandie Ser. 7, 6: 100–108. 1923 (1924).—A Latin diagnosis is given, as well as a long French description.—*M. Denis (translated by E. B. Payson).*

2994. Elfstrand, M. **Nya bidrag till kännedomen om Dalarnes Hieracia alpina.** [**New contributions to the knowledge of alpine Hieracia in Dalecarlia (Sweden).**] Arkiv. Bot. 19^{7}: 1–32. 1924.—The following are new: *Hieracium glossolbium, H. tescorum, H. inexspectum, H. incisionum, H. semipetiolatum, H. pilimarginatum, H. eulagarum, H. semipurpurifolium, H. aitium, H. adenacron, H. lasium, H. pseudoleptaleum, H. semileptaleum, H. atrocomatum, H. deficiens, H. lisselense, H. pullostylum, H. setarum, H. exiguiflorum, H. adnatifrons H. peradnatum, H. adenomanum, H. subauriflorum, H. sublividorubens, H. listropheron, H. mucronifolium, H. adrigidum,* and *H. subdesmaticum.—O. Heilborn.*

2995. Gagnepain, F. **Euphorbiacées nouvelles.** [**New Euphorbiaceae.**] Bull. Soc. Bot. France **71**: 566–570. 1924.—The following new species are described: *Actephila albidula, A. nitidula,* and *A. Pierri* from Cochinchina; *A. platysepala* from Laos; *A. siamensis* Pierre from Siam; *A. subsessilis* and *Cleidion bracteosum* from Tonkin.—*C. E. Moore.*

2996. Gagnepain, F. **Euphorbiacées nouvelles (Blachia, Dimorphocalyx et Erismanthus).** [**New Euphorbiaceae.**] Bull. Soc. Bot. France **71**: 619–623. 1924.—New species are described as follows: *Blachia Cotoneaster* from Laos; *B. Poilanei* from Annam; *B. siamensis* from Siam; *Dimorphocalyx Beccarii* from Borneo; *D. Poilanei* from Annam; and *Erismanthus indochinensis* from Annam.—*C. E. Moore.*

2997. Gagnepain, F. **Euphorbiacées nouvelles d'Indo-Chine (Coccoceras, Dalechampia, Epiprinus, Galearia, Melanolepis, Tragia).** [**New species of Euphorbia from Indo-China (Coccoceras, Dalechampia, Epiprinus, Galearia, Melanolepis, Tragia).**] Bull. Soc. Bot. France **71**: 1021–1029. 1924.—Descriptions are given of *Coccoceras anisopodum* Gagnep. (Cambodia), of *Delechampia falcata* Gagnep. (Cambodia), a very characteristic species which shows no affinity with the Asiatic species already known, *Epiprinus Balansae* Gagnep. (Tonkin), *E. Poilanei* Gagnep. (Annam), *Galearia dongnaiensis* Pierre mss. (Cochin China), *Melanolepis vitifolia* Gagnep. (Cambodia), and *Tragia Delpyana* Gagnep. (Laos and Cochin China).—*H. des Gayets (translated by E. B. Payson).*

2998. Gagnepain, F. **Quelques genres nouveaux d'Euphorbiacées.** [**Some new genera of Euphorbiaceae.**] Bull. Soc. Bot. France **71**: 864–879. 1924.—The author describes 8 new genera. Latin diagnoses are given of these new genera and of the new species which are appended to them. **Cenesmon** n. gen., very close by its external characters to *Tragia*, even closer to *Cnesmone*, from which it differs by the lack of a stylar column, by the compressed stigmas, which are completely exserted at anthesis, and by the conical stigmatic papillae. Six new species are described as follows: *Cenesmon laoticum*, from Laos and Cambodia; *C. lineare* from Laos; *C. Mairei* from China (Yunnan); *C. peltatum*, Annam; *C. Poilanei*, Annam; *C. tonkinense* (*Cnesmone javanica* Pax, not Bl.), Tonkin, Annam. **Gatnaia** n. gen., near *Nanopetalum* Hassk., but it may be distinguished by the complete absence of petals; one species is described: *Gatnaia annamica* from Annam. **Glyphostylus** n. gen., one species *G. laoticus* from Laos, is described. **Oligoceras** n. gen., characterized by the presence of appendages in the form of horns on the calyx, one new species, from Annam is described, *O. Eberhardii*. **Pantadenia** n. gen., with one new species, *P. adenanthera* from Laos, Cambodia, Cochin China. **Prosartema** n. gen., with one new species, *P. stellaris* from Tonkin. **Thelypetalum** n. gen., with one new species, *T. Pierrei*, from Cochin China. **Thyrsanthera** Pierre mss. with a single new species, *T. suborbicularis* from Cambodia, Annam and Cochin China.—*L. Faucheron (translated by E. B. Payson).*

2999. Gandoger, Michel. **Le genre Sida (Malvacées).** [**The genus Sida.**] Bull. Soc. Bot. France **71**: 627–633. 1924.—A key to the species is given.—*C. E. Moore.*

3000. Guillaumin, A. **Les Cypripédiées d'Indo-chine.** [**The Cypripediae of Indo-china.**] Bull. Soc. Bot. France **71**: 548–558. 1924.—There are 10 species of *Paphiopedium*, including

P. Delenatii Guillaum. n. sp. and *P. Gratrixianum* Guillaum. n. name and 4 varieties, including *P. callosum* Kerchove var. *angustisepala* n. var. There are 3 natural hybrids, *P.* × *Beyrodtianum* Guillaum. n. name, *P.* × *siamense* Rolfe, and *P.* × *annamense* Guillaum. n. name. A key to species is given.—*C. E. Moore.*

3001. Holm, Theo. **Euphorbia marilandica Greene.** Amer. Midland Nat. 9: 149–175. *Pl. 11–12, fig. 1–3.* 1924.—This is a comparative study of the typical *Euphorbia marilandica* and its variety *albo-marginata* with *E. corollata* and *E. Ipecacuanhae.*—*Sister M. Ellen.*

3002. Krause, K. **Die Flagellariaceen Papuasiens. II.** [**The Flagellariaceae of Papuasia. II.**] Bot. Jahrb. 59: 544–546. 1925.—No additional species have been added since Lauterbach's article in Bot. Jahrb. 50: 288, 1913. Only 3 species are known in the region: *Flagellaria indica* L.; *F. gigantea* Hook. f; and *Hanguana malayana* (Jack) Merrill. Notes are given on these 3 species.—*K. M. Wiegand.*

3003. Krause, K. **Die Liliaceen Papuasiens. II.** [**The Liliaceae of Papuasia. II.**] Bot. Jahrb. 59: 547–567. 1925.—Since the previous papers on this family by Lauterbach (1913) and Hallier (1914) in Bot. Jahrb., no new genera have been added, but many new species are here reported. Lauterbach's notice of the relationship of the Papuasian Liliacea to those of Australia, the Monsoon Region, and New Caledonia is upheld, as are also several other statements on distribution as made by him. The family is now known in the higher mountains. The species are distributed as follows: *Smilax*, 17; *Dianella*, 14; *Cordyline*, 6; *Luzuriaga*, 4; *Dracaena*, 2; *Lomandra*, 2; *Astelia*, 2; *Rhipogonum*, 2; *Thysanotus*, 1; *Arthropodium*, 1; *Schelhammera*, 1; and *Iphigenia*, 1. Lauterbach's 24 species are increased to 53; of these, 29 are endemic in Papuasia. Notes are given on each species and the following are proposed as new: *Dianella Ledermannii; D. monticola; Cordyline terminalis* Kunth f. *angustifolia*, and f. *montana; C. lateralis* Lauterb. f. *monticola; C. Ledermannii; Astelia novo-guineensis; Smilax kaniensis; S. ampla* Warb.; *S. keyensis* Warb.; *S. annulata* Warb.; *S. amblyobasis; S. anguina;* and *S. rubromarginata.*—*K. M. Wiegand.*

3004. Lauterbach, C. **Die Vitaceen Papuasiens.** [**The Vitaceae of Papuasia.**] Bot. Jahrb. 59: 505–534. 1925.—Though the Vitaceae of this region are related to those of the Malay Archipelago there is also a strong endemism. Thirty-four of the 56 species are endemic. The 56 species are distributed as follows: *Ampelocissus* 2 (1 endem.), *Tetrastigma* 17 (12 endem.), *Cissus* 20 (11 endem.), and *Leea* 17 (10 endem.). The affinity with surrounding regions is discussed. The family is best developed in the flat country and the hills up to 300–400 m. It is especially abundant in forests on the alluvial stream banks. *Cissus trifolia* and some other species form a conspicuous feature of the landscape. Several species have a beautiful tawny or silky tomentum which renders them very showy. Keys and critical notes on structure, distribution, and nomenclature are given. The following species, varieties, combinations, and names are proposed as new: *Ampelocissus Muelleriana* Planch. vars. *cuspidata* and *latifolia, Tetrastigma maluense, T. Warburgii, T. petrophilum, T. Pullei, T. Schraderi-montis, T. Schlechteri, T. gibbosum, T. sessilifolium, Cissus Ledermannii, C. adnata* Roxb. var. *montana, C. acrantha, C. Behrmannii, C. arthroclada, C. trifolia* (L.) Schum. var. *cinerea* (*C. cinerea* Lam.), *C. megacarpa, C. lineata* Warb. var. *fusco-lanata, Leea Zippeliana* Miq. var. *ornata, L. gracilis,* and *L. Rodatzii* (*L. gigantea* Lautbch. & Schum., not Griff.).—*K. M. Wiegand.*

3005. Lauterbach, C. **Nachträge zu 59: Rutaceen, 66: Anacardiaceen, 69: Rhamnaceen.** [**Appendix to 59: Rutaceae, 66: Anacardiaceae, 69: Rhamnaceae.**] Bot. Jahrb. 59: 535–537. 1925.—The numbers in the title refer to previous articles under the general heading, "Beiträge zur Flora von Papuasien, XII." The following species are described and discussed, all new: *Terminthodia lanceolata, Semecarpus albicans,* and *? Rhamnus Ledermannii.*—*K. M. Wiegand.*

3006. Luizet, D. **Une variété nouvelle de Saxifraga exarata Vill.** [**A new variety of Saxifraga exarata Vill.**] Bull. Soc. Bot. France 71: 782–783. 1924.—This variety collected in the Alps of Cottienne by H. Correvon has received the name of *Saxifraga exarata* Vill. var. *gemmascens* Luizet & Correvon.—*J. Beauverie* (*translated by E. B. Payson*).

3007. McFarland, Frank T., and W. A. Anderson, Jr. **A new Helianthus from Kentucky.** Amer. Midland Nat. 9: 137–141. *Pl. 10.* 1924.—*Helianthus kentuckiensis* is described and illustrated as a new species. Co-types are deposited in the National Herbarium,

Washington, D. C., Herbarium Missouri Botanical Garden, St. Louis, Mo., Herbarium Univ. of Kentucky, Herbarium Harvard Univ., and Herbarium Univ. of Notre Dame.—*Sister M. Ellen.*

3008. McGivney, Sister Vincent De Paul. **An unusual Polygonatum.** Amer. Midland Nat. 9: 662–664. 1925.—This is a description of *Polygonatum commutatum* f. *ramosum.* The plant was found about 1 mile southwest of the University of Notre Dame and is preserved in the herbarium of that University.—*Sister M. Ellen.*

3009. Markgraf, Fr. **Die Eichen Neu-Guineas (Nactrag zu No. 92).** [**The Oaks of New Guinea (Appendix to No. 92).**] Bot. Jahrb. 59: 538–539. 1925.—This is an appendix to paper No. 92 in the series entitled, "Beiträge zur Flora von Papuasien, XII." No new names are proposed. Notes are given on *Lithocarpus deBaryana, L. imperialis, Castanopsis Junghuhnii* and *Pasania sogerensis.*—*K. M. Wiegand.*

3010. Markgraf, Fr. **Die Myricaceen auch in Papuasien vertreten.** [**Myricaceae are found in Papuasia.**] Bot. Jahrb. 59: 540. 1925.—This family does not occur in Australia and is extremely rare in the islands of the Pacific. *Myrica Vidaliana* Rolfe and *M. javanica* Bl. are the only species known in the Pacific. They both occur in the Philippines and the latter occurs also in Java. This 2nd species, *M. javanica,* has now been found in New Guinea. —*K. M. Wiegand.*

3011. Mattfeld, J. **Compositae novae africanae.** [**New African Compositae.**] Bot. Jahrb. 59 (Beiblatt 133): 1–68. *Pl. 19.* 1924.—This paper is No. 51 of the series, "Beiträge zur Flora von Afrika, herausgegeben von A. Engler." It is based on the recent collections of Mildbraed in Cameroon as they occur in the Berlin herbarium. A key is given to all the known tropical African species of *Echinops.* The following species, varieties, and combinations are proposed as new. In the statement of locality the names of the countries are abbreviated as follows: A., Adamaua; C. Cameroon; N., Nyassaland; U., Ungava. *Vernonia kamerunensis* (C.); *V. Ledermannii* (C.); *V. otophora* (C.); *V. mokaensis* (Fernando Poo); *V. latisquama* (C.); *V. tolypophora* (N.); *Aedesia Engleriana* (C.); *A. spectabilis* (C.); *Neurolakis modesta* (C.); *Helichrysum romarinum* (U.); *H. armatum* (U.); *H. lychnophorum* (U.); *H. amblyphyllum* (U.); *H. Stolzii* (N.); *Inula Stolzii* (N.); *Jaumea rotundifolia* (A.); *J. multicaulis* (*Hypericophyllum multicaule* Hutchinson); *J. Gossweileri* (*H. Gossweileri* S. Moore); *J. Tessmannii* (C.); *Senecio leptocephalus* (A.); *S. manengubensis* (C.); *S. graciliserra* (C.); *S. Tessmannii* (C.); *S. Thorbeckei* (C.); *S. tibatiensis* (C.); *S. kamerunensis* (C.); *S. fallax* (C.); *S. elgonensis* (U.); *S. rhammatophyllus* (U.); *S. caryophyllus* (U.); *S. kyimbilensis* (N.); *S. doryphorus* (N.); *S. depauperatus* (N.); *S. Stolzii* (N.); *S. ianthinus* (N.); *S. effusus* (N.); *S. epidendricus* (U.); *Euryops Hildebrandtii* (Somalaland); *E. elgonensis* (U.); *E. agrianthoides* (Kilimandscharo); *Tripteris Gossweileri* (Angola); *Echinops Mildbraedii* (C.); *E. lanceolatus* (A.); *E. himantophyllus* (C.); *E. Rangei* (A.); *E. Schweinfurthii* (Abyssinia); *E. otarus* (A.); *E. longifolius* A. Rich. var. *pinnatilobata* (Cent. Africa); *E. bathrophyllus* (Togo); *E. Sereti* De Wild. var. *setifer* (Karagwe); *E. ochroleucus* (Bambuttu Mountains); *E. Hoffmannianus* (Abyssinia); *E. Oehlerianus* (Dutch East Africa). The new genus **Neurolakis** is proposed. *Senecio Poggeanus* is said to be a nom. nov. but no synonym or description is given.—*K. M. Wiegand.*

3012. Mattfeld, J. **Eine neue Minuartia (M. Handelii) aus der Herzegowina.** [**Minuartia Handelli, a new species from Herzegovina.**] Repert. Spec. Nov. Regni Veg. 19: 193–195. 1923. (Repert. Eur. et Med. 1: 593–595. 1923.)—A description of *Minuartia Handelli* is given, with notes on its habitat, and a comparison with its related species.—*John E. Dinsmore.*

3013. Pittier, H. **Arboles y arbustos nuevos de Venezuela. Cuarta y quinta décadas.** [**New trees and shrubs of Venezuela. Fourth and fifth decades.**] Bol. Cient. y Técn. Museo com. [Caracas] Venezuela **1926**[1]: 3–31 [Abstract p. 45–73]. 1925.—This is the 3rd contribution to the knowledge of the trees of Venezuela. The 2 first ones were published in the now extinct Bol. Com. e indust. Nos. 13 & 34, and also in abstracts (p. 1–44). The present paper describes the new genus **Aveledoa** (Olacaceae) with 1 species (*A. nucifera);* further, 5 new Pithecolobii of section *Unguis-Cati* (*Pithecolobium concinnum, P. glaucescens, P. microchlamys, P. zuliaense,* and *P. guaricense*), 2 Samaneae (*Samanea guajacifolia* and *S. samanigua*), *Caesalpinia Granadillo, Coursetia caracasana, Lonchocarpus lutescens, Zizyphus melastomoides, Z. Saeri,*

Gustavia yaracuyensis, *G. fustis-mortui*, *Jugastrum Christii*, *Aspidosperma quadriovulatum*, *Zschokkea armata*, *Couma sapida*, *Petraea glandulosa*, and *Sickingia parvifolia*. In almost every case, the description of the new species is followed with an analytical key of the congeneric species hitherto reported from Venezuela.—*Author.*

3014. Raymond-Hamet. **Sur quelques Crassulacées asiatiques critiques et sur un Sedum nouveau de Madère.** [Critical Asiatic Crassulaceae and a new Sedum of Madeira.] Bull. Soc. Bot. France **71**: 1216–1242. 1924.—*Sedum Rosthornianum* Diels is very near to *S. elatinoides* Franchet. *Sedum viscosum* can not be separated from the northern form of *Sedum drymaroides* Hance.—*H. des Gayets* (*translated by E. B. Payson*).

3015. Schlechter, R. **Die Stemonaceen von Papuasien.** [The Stemonaceae of Papuasia.] Bot. Jahrb. **59**: 541–543. 1925.—These plants are climbers growing scattered on the wood borders and among bushes, but are not found far up the mountains nor on the sea coast. The following 2 species are described as new: *Stemona papuana*, and *S. Versteegii*.—*K. M. Wiegand.*

3016. Schlechter, R. **Mitteilungen über europäische und mediterrane Orchideen. IV.** [European and Mediterranean orchids. IV.] Repert. Spec. Nov. Regni Veg. **19**: 33–48. 1923. (Repert. Eur. et Med. **1**: 561–576. 1923.)—A very full description of the genus *Serapias*, with key, is given, and the following new species are diagnosed in Latin and new combinations made: *Serapias mauretanica* from Algiers; *S. excavata* from Sardinia and Corsica; *S. azorica* from the Azores; and *S. vomeracea* (Burm.) Briquet var. *olbia* (*S. olbia* Verguin.). Five new species of *Ophrys* and *Orchis* from the district of the "Flora Orientalis" are also described: *Ophrys cilicica* from Alexandretta in Syria; *O. Dinsmorei* from Jerusalem and Mt. Carmel in Palestine; *O. Heldreichii* from Attica and Crete; *Orchis galilaea* from Palestine, originally given as *O. punctulata* Stev. var. *galilaea* Bornm. & Schulze (Bornm. Nos. 1484–1485); *Orchis Kotschyi* (*O. incarnata* var. *Kotschyi* Rchb.).—*John E. Dinsmore.*

3017. Small, J. K. **Iris Kimballiae.** Addisonia **9**: 59–60. *Pl. 318* (*col.*). 1924.—A highly ornamental species, here delimited and proposed as new. The type locality is Apalachicola, Florida, where plants were collected by Winifred Kimball in the fall of 1921. It grows in black silt loam soil in swamps. The species seems to be isolated in the coast-region swamps on both sides of the northern part of Florida.—*T. J. Fitzpatrick.*

3018. Small, J. K. **Iris savannarum.** Addisonia **9**: 57–58. *Pl. 317* (*col.*). 1924.—This species is here delimited and proposed as new. It is a native of central peninsular Florida, growing in sandy loam soil. The type locality is near Olga, Florida, where it was collected in December, 1923. It grows in large colonies, is a profuse bloomer, and has large ornamental flowers. The species has no immediate relatives, is isolated and endemic.—*T. J. Fitzpatrick.*

3019. Stojanoff, N., and B. Stefanoff. **Eine neue Chondrilla aus Bulgarien.** [A new Chondrilla from Bulgaria.] Bot. Jahrb. **59** (Beiblatt 134): 16. *Pl. 20*. 1925.—*Chondrilla Mattfeldii* is described as new.—*K. M. Wiegand.*

3020. Ugrinski, C. A. **Diagnoses specierum trium generis Orchis nondum vel imperfecte descriptarum.** [Descriptions of three imperfectly known species of Orchis.] Repert. Spec. Nov. Regni Veg. **18**: 142–144. 1922. (Repert. Eur. et Med. **1**: 494–496. 1922.)—These 3 species, from southern Russia, are redescribed in full, with the note that they may be hybrids of *O. elegans* Heuff. and *O. coriophora* L.: *O. pseudoparviflora* Ugrinski, *O. Reinhardii* Ugrinsky, and *O. Kelleriana* Ugrinsky.—*John E. Dinsmore.*

3021. Wolff, H. **Athamanta macrosperma spec. nov. ex Attica.** [A new species from Attica, Athamanta macrosperma.] Repert. Spec. Nov. Regni Veg. **18**: 133. 1922. (Repert. Eur. et Med. **1**: 485. 1922.)—A description in Latin of this new species, from Tatoi in Greece, is given.—*John E. Dinsmore.*

3022. Wolff, H. **Olymposciadium gen. nov. Bithynicum.** [A new Bithynican genus, Olymposciadium.] Repert. Spec. Nov. Regni Veg. **18**: 132. 1922. (Repert. Eur. et Med. **1**: 484. 1922.)—This new genus, **Olymposciadium**, which had been designated by Sibthorp and Smith as *Seseli*, and by Boissier as *Carum*, is described in Latin. Under this, one species is given: *O. caespitosum* (Sibth. & Sm.) Wolff.—*John E. Dinsmore.*

3023. Zimmermann, W. **Parapactis nov. gen., eine übersehene Orchidaceengattung.** [A new genus of the Orchidaceae, Parapactis.] Repert. Spec. Nov. Regni Veg. **18**: 283–287.

8 fig. 1922. (Repert. Eur. et Med. **1**: 523–527. *8 fig.* 1922.)—The characters of this new genus, Parapactis, and the description of *Parapactis epipactoides* (*Epipactis viridiflora* Rchb.), are given.—*John E. Dinsmore.*

REVISIONS AND MONOGRAPHS

3024. De Wildeman, É. **Documents pour une monographie des espèces africaines du genre Vangueria Juss.** [Papers for a monograph of the African species of the genus Vangueria Juss.] Bull. Jard. Bot. État. Bruxelles **8**: 39–66. 1922.—Remarks published on the African species and their distribution. The following species from the Congo, new to science, are published: *Vangueria beniensis, V. Bequaerti, V. bomiliensis, V. butaguensis, V. Claessensi, V. glabrifolia, V. gracilipetiolata, V. ituriensis, V. ruwenzoriensis, V. ruwenzoriensis* var. *breviflora*, and *V. squamata.*—*Author* (*translated by E. B. Payson*).

3025. Epling, C. C. **Monograph of the genus Monardella.** Ann. Missouri Bot. Gard. **12**: 1–106. *Pl. 1–7.* 1925.—A detailed study is presented of the morphology, distribution and taxonomy of this North American genus. An attempt has been made to indicate the phylogeny of the forms of this polymorphic genus, many of which have previously been described as species of varying weight, by the use of specific, subspecific, and varietal categories. The species is employed in the "Linnaean" sense to indicate a category morphologically distinct, which in turn is composed of one or more subspecific categories each of which has a natural geographical distribution and represents a modal point of morphological variation within the species. The subspecies is viewed, then, as an incipient species which by isolation might be expected to form a species. The variety is used to indicate occasional minor variations which apparently do not have a characteristic distribution but which may be due to environmental influences, or which may possibly represent minor mutations. No evidence of hybridization between species was found; it is believed, however, that intermediate forms between subspecies are resultant in part from hybridization. The following new names are employed: *Monardella macrantha* subsp. *eumacrantha, M. villosa* subsp. *euvillosa, M. odoratissima* subsp. *euodoratissima, M. linoides* subsp. *eulinoides.* The following new combinations are employed: *M. macrantha* subsp. *nana* (Gray), *M. villosa* var. *franciscana* (Elmer), *M. villosa* subsp. *subserrata* (Greene), *M. villosa* subsp. *Sheltoni* (Torrey), *M. villosa* subsp. *neglecta* (Greene), *M. odoratissima* subsp. *discolor* (Greene), *M. odoratissima* subsp. *glauca* (Greene), *M. odoratissima* subsp. *pallida* (Heller), *M. odoratissima* subsp. *pinetorum* (Heller), *M. odoratissima* subsp. *parvifolia* (Greene), *M. odoratissima* subsp. *australis* (Abrams), *M. linoides* subsp. *stricta* (Parish), *M. undulata* var. *crispa* (Elmer). No new species or subspecies are described. Distributions and flower parts are illustrated. The criteria for determination of centers of distribution in absence of paleontological evidence, developed by C. C. Adams and others, are further modified and revised.—*Author.*

3026. Epling, C. C. **Studies on South American Labiatae. I.** Ann. Missouri Bot. Gard. **12**: 107–132. *Pl. 8–9.* 1925.—Synopses with descriptions and keys are given of the genera *Teucrium, Rosmarinus, Marrubium, Prunella, Lamium, Leonurus*, and *Leonotis.* The following new combinations are made: *Teucrium cubense* subsp. *Chamaedrifolium* (Mill.), *T. nudicaule* var. *leucanthum* (Phillipi); the following are described as new: *T. cubense* subsp. *cordobense* and *T. tenuipes*, the former with habitat in the Sierra Cordoba, Argentina, the latter found on the Galapagos Islands and previously referred to *T. inflatum* Sw.—*Author.*

3027. Guillaumin, A. **Matériaux pour la flore de la Nouvelle-Calédonie. Revision des Lauracées.** [Materials for the flora of New Caledonia. Revision of the Lauraceae.] Bull. Soc. Bot. France **71**: 1101–1112. 1924.—The author demonstrates that the genus *Beilschmiedia* does not exist in New Caledonia and that the species referred to it should be placed in the genera *Endiendra* and *Cryptocarya.* He gives a key to *Cryptocarya, Endiendra* and *Litsea.*—*H. des Gayets* (*translated by E. B. Payson*).

3028. Mansfeld, R. **Vorarbeiten zu einer Monographie der Gattung Ligustrum.** [Preliminary treatment looking toward a monograph of the genus Ligustrum.] Bot. Jahrb. **59** (Beiblatt 132): 19–75. 1924.—A comprehensive monograph of the genus has not appeared since that of Decaisne in 1878. The present treatment is presented under the following headings: I. General part. 1. Habit and vegetative organs. (a) Germination. (b) Habit,

twigs, buds. (c) Leaf. 2. Anatomical considerations. (a) Stem—bark, wood, pith. (b) Leaf—epidermis, emergence, stomates, assimilative system, conductive and mechanical system. 3. Floral conditions. (a) Inflorescence. (b) Flowers. 4. Pollination and hybridization. 5. Fruit and seed. 6. Geographical distribution and ecological considerations. 7. Uses. 8. Affinities and phylogeny. 9. History of the taxonomic treatment of the genus.—II. Special part. 1. Subdivisions of the genus. 2. Enumeration and description of species. Two types of behavior with reference to the relation of vegetative twig and inflorescence are noted, as also 2 types of corolla in the genus. The genus is divided into 3 sections based on the fruit: Section 1. *Subdrupaceae*, cells of the endocarp woody, 1 or 2 seed developed. Sect. 2. *Sarcocarpion*, cells of the endocarp woody, endocarp dehiscent, 1 seed developed. Sect. 3. *Baccatae*, cells of the endocarp unlignified: usually 2 to 4 seed developed. Keys, descriptions, and notes are given. The following varieties, forms, and combinations are proposed as new: *Ligustrum robustum* Bl. var. *Walkeri* (*L. Walkeri* Decne.); *L. Perrottetii* A. DC. var. *neilgherrense* (*L. neilgherrense* Wight); *L. compactum* Hook. f. & Th. f. *tubiflorum; L. japonicum* Thunb. var. *spathulatum; L. glomeratum* Bl. var. *Cumingianum* (*L. Cumingianum* Decne.); *L. nepalense* Wall. var. *grandiflorum* (*Phillyrea? grandiflora* Wall.); *L. Quihoui* Carr. var. *glabrum; L. Ibota* Sieb. var. *amurense* (*L. amurense* Carr.), and var. *Regelianum* Rehder (*L. Regelianum* of authors); *L. ciliatum* Blume var. *Tschonoskii* (*L. Tschonoskii* Decne.), and var. *macrocarpum* (*L. macrocarpum* Koehne). Lists of species not seen, and of excluded species are given.—*K. M. Wiegand.*

3029. Pax, F. **Die schlesischen Hieracien. [The Hieracia of Silesia.]** Bot. Jahrb. **59** (Beiblatt 132): 1–18. *Fig. 1–2.* 1924.—This is a general survey of the genus *Hieracium* as it occurs in Silesia. The subject is presented under the following headings: (1) The species and intermediate forms in the flora of Silesia; (a) the subgenus *Euhieracium*, sections *Villosa, Oreadea, Vulgata, Alpina, Prenanthoidea, Tridentata, Umbellata, Sabauda, Italica,* and *Hololeion;* (b) the subgenus *Pilosella*, sections *Pilosellina, Auriculina, Pratensina, Echinina* and *Praealtina.* Each section is discussed; (c) unrecognized species consisting of a long list of names adopted by G. Schneider in his treatment of the Hieracia of the Riesengebirge. (2) Distribution in Silesia. Lists are given of species found on the plains, and in the mountains, and also lists of other special groups of species. Problems of distribution are noted. (3) Relation to other regions. The boreal-subarctic, mid-European, Sibirio-European, Mediterranean, alpine, and boreal-alpine affinities are analyzed. The mid-European and the Siberio-European elements are by far the best represented. (4) Descent. Fossil Hieracia are not definitely known. The genus probably occurred as early as the Tertiary. The origin of intermediate forms is a problem. The author favors the hybrid rather than the mutation hypothesis. Mendel and others have produced artificial hybrids especially in the subgenus *Pilosella.* Parthenogenesis explains why the hybrids often breed true. Some hybrids have apparently become species. Stylosity as an aid to hybridity is discussed. Not all new forms, however, are due to hybridity. The local extinction of the Hieracium flora in the high mountains is difficult to explain.—*K. M. Wiegand.*

3030. Perkins, Janet. **Übersicht über die Gattungen der Monimiaceae sowie Zusammenstellung der Abbildungen und der Literatur über die Arten dieser Familie bis zum Jahre 1925. [A survey of the genera of the Monimiaceae as well as a correlation of the illustrations and the literature of the species of this family up to the year 1925.]** *Roy. 8vo, 56 p., 47 fig.* Wilhelm Engelmann: Leipzig, 1925.—The author has reviewed the numerous contributions which have added to our knowledge of the Monimiaceae during the past 25 years, and records the essential results of that critical survey. The subject matter is presented in such a manner that it can be adapted readily to the new edition of "Die Natürlichen Pflanzenfamilien" now being issued under the editorship of A. Engler. The Monimiaceae as here outlined embraces 382 species, referred to 33 genera of which the larger are: *Siparuna* (116 spp.), *Mollinedia* (79 spp.), *Kibara* (36 spp.), *Tambourissa* (26 spp.), and *Steganthera* (19 spp.). This family is best represented in tropical America.—*J. M. Greenman.*

3031. Pilger, R. **Beiträge zur Kenntnis der Gattung Plantago. [Contributions to the knowledge of the genus Plantago.]** Repert. Spec. Nov. Regni Veg. **18**: 449–475. 1922. (Repert. Eur. et Med. **1**: 529–555. 1922.)—The following new combinations, varieties, and forms

of *Plantago* are described by R. Pilger: *P. albicans* L. var. *typica* f. *vulgaris*, f. *angustifolia* (*P. albicans* L. b. *angustifolia* Guss.), f. *major* (*P. albicans* var. *major* Boiss.), f. *latifolia* (*P. albicans* β *latifolia* Willk. & Lange), f. *compacta* from N. Africa, f. *nana* (*P. albicans* var. *nana* Boiss.); *P. notata* Lagasca var. *alba* from Algiers; *P. cafra* Decne. f. *capillaris* (*P. capillaris* E. Mey. ex DC.); *P. ciliata* Desf. var. *angustifolia* from Algiers; *P. Bellardi* All. f. *pygmaea* (*P. pygmaea* Lam.), and var. *deflexa* from the Greek Islands, Assyria and Persia. A very full synonymy with list of locations is given for each species.—*John E. Dinsmore.*

3032. Pilger, R. **Beiträge zur Kenntnis der Gattung Plantago.** [**Contributions to the knowledge of the genus Plantago.**] Repert. Spec. Nov. Regni Veg. **19**: 105–112. 1923. (Repert. Eur. et Med. **1**: 585–592. 1923.)—The 3rd section of the genus, *Lamprosantha* Decne., is taken up, and the following new combinations and forms are described: *Plantago media* L. f. *minor* (*P. media* β *minor* Rothe), f. *campestris* (*P. media* β *campestris* Schur, f. *crassifolia* from Königsberg; *P. maxima* Juss. ex Jacq. f. *minor* from Hungary and Russia.—*John E. Dinsmore.*

3033. Pilger, R. **Über die Formen von Plantago major L.** [**The forms of Plantago major L.**] Repert. Spec. Nov. Regni Veg. **18**: 257–283. 1922. (Repert. Eur. et Med. **1**: 497–523. 1922.)—A full discussion and descriptions of these new combinations and forms are given: *P. major* L. var. *vulgaris* Pilger f. *vulgaris* (*P. major* α *vulgaris* Hayne) subf. *maxima* (*P. major* L. α *maxima* Schlecht.), subf. *cruenta* (*P. major* β *cruenta* Holuby), f. *agrestis* (*P. major* γ *agrestis* Fries), f. *microstachya* (*P. major microstachya* Hayne) subf. *dura* from Berlin, f. *pauciflora* (*P. pauciflora* Gilibert), f. *leptostachya* (*P. major* β *leptostachya* Wallr.), f. *erecta* from Europe, North and South America, f. *ovata* from Berlin, f. *scopulorum* (*P. major* β *scopulorum* Fries & Broberg) subf. *integra* and subf. *dura*, f. *intermedia* (*P. intermedia* Gilib.) subf. *minor* (*P. minor* Gilib.), f. *rotundata* from Austria and Russia, f. *sinuata* (*P. sinuata* Lam.) subf. *brevipedicellata* from Athens, and f. *Rocae* (*P. Rocae* Lorentz); *P. major* L. var. *paludosa* Béguinot f. *longissima* from Morocco, Cape Verde and Hawaii, subvar. *brachyphylla* from Europe and South America, subvar. *incisa* from South America, subvar. *brevibracteata* Pilger from China and Luzon; *P. major* L. var. *flavovirens* from North America f. *minor* from Ontario, f. *latissima* from Manitoba; *P. major* L. var. *pachyphylla* from North America, var. *brachyphylla* (*P. brachyphylla* Edgew. ex. Dec.), var. *micrantha* Pilger from Kamchatka, and var. *latissima* from Tibet.—*John E. Dinsmore.*

FLORISTICS AND PLANT DISTRIBUTION

3034. Anonymous. **From St. Helena's Island, S. C. Drawn by Annie L. Sloan.** Charleston [South Carolina] Mus. Bull. **17**: 15. *1 pl.* 1922.—This is a full page illustration, without notes, of *Stuartia Malacodendron* L.—*C. A. Ludwig.*

3035. Alm, C. G. **Om Braya glabella Richards. Och dess utbredning i Skandinavien.** [**Braya glabella Richards. and its distribution in Scandinavia.**] Acta Flora Sueciae [Utgivare] **1**: 245–264. *Pl. 16.* 1921.—E. Fries in 1839 (Nov. issue Fl. Suec. Mant.) had considered those collected by Ångström in Norway and Sweden as a new variety *rivularis*. Fries' diagnosis corresponds favorably with Richardson for *Braya glabella*, of which Gelert in Botanisk Tidskrift 1897, considered as being correct for the samples brought from eastern Greenland and northern Scandinavia. *B. alpina* is known to occur only in the eastern Alps. *Braya purpurascens* is found only on the northern icy coasts and was discovered by Ove Dahl on the rocky slopes of the islands of northern Finland. This species differs from those closely related, through its knot-like oval and oval-like cylindrical fruit (5–12 × 13 mm.) and through its 2 distinct ball-shaped markings.—(*Rev. in Bot. Notiser 1921: 147–148, translated by A. L. Bakke.*)

3036. Barnhart, J. H. **Sherwoodia galacifolia.** Addisonia **10**: 15–16. *Pl. 328 (col.).* 1925.—This small, perennial herb is commonly known as *Shortia*, in honor of Charles William Short, of Kentucky. It is native in a limited area in Transylvania County, North Carolina, where it was discovered by André Michaux, December 8, 1788. Michaux's specimens were in fruit and he did not name the plant. In 1839 Asa Gray found Michaux's specimens in Paris. In 1842 he and Torrey published *Shortia galacifolia* as a new genus and species. The genus *Shortia* being preoccupied, House in 1908 transferred the species to the new genus *Sherwoodia*. In May, 1877, a small, outlying colony of *Shortia* was found along the Catawba River in Mc-

Dowell County, North Carolina. This was soon exterminated. In 1886, C. S. Sargent rediscovered Michaux's original locality where the species is abundant. *Shortia* has been introduced extensively into cultivation and is hardy over a wide range. The flowers and foliage are pleasingly ornamental.—*T. J. Fitzpatrick.*

3037. Chermezon, H. **Cypéracées récoltées à la Guyane par M. Lemée.** [Cyperaceae collected in Guiana by M. Lemée.] Bull. Soc. Bot. France **71**: 1047–1054. 1924.—In the course of a sojourn in French Guiana M. Lemée, then Inspector of the Colonies, collected about 60 excellent specimens of species of Cyperaceae, which he submitted to M. Henri Chermezon for examination. It is impossible at the present time to estimate the number of species which may occur in French Guiana. One may estimate the number at about 120. A revision of the specimens existing at the Museum would undoubtedly suppress some species that are now maintained but it would certainly add more than it suppressed. The number of unnamed specimens is very large and among them would certainly be found many representing new species or which are referable to species known elsewhere but not recorded from Guiana. A more complete exploration of the colony could not fail to add a very considerable number to the list of species. The author lists the species collected by M. Lemée and adds his personal observations.—*H. des Gayets (translated by E. B. Payson).*

3038. Chevalier, Aug. **Une excursion aux îles Glénans.** [An excursion to the Glenan Islands.] Bull. Soc. Bot. France **71**: 523–546. 1924.—The Narcissi of the islands are discussed under the following headings: History, botanical characters, fructification, floral polymorphism, varieties and teratological forms, geographic distribution and ecology, systematic position, origin and conservation of species.—*C. E. Moore.*

3039. De Wildeman, É. **Additions à la flora du Congo.** [Additions to the flora of the Congo.] Bull. Jard. Bot. État Bruxelles **7**: 271–316. 1921.—These continuations of previous studies give, aside from the distribution in the Congo of known species, the distribution of plants mentioned for the first time and the descriptions of plants diagnosed in preceding studies.—*Author (translated by E. B. Payson).*

3040. De Wildeman, É. **Notes sur quelques espèces africaines de Glycine L.** [Notes on some African species of Glycine L.] Rev. Zoöl. Africaine (Suppl. Bot.) **12**: 498–514. 1924.—Observations on the characters of the sections and descriptions of the following species from the Congo: *Glycine albidiflora, G. Claessensi, G. cyanea, G. lanceolifoliata, G. Laurenti. G. Mearnsi* from English West Africa is also described. Stations for some other species are recorded.—*Author (translated by E. B. Payson).*

3041. Gerbault, E. L. **Sur plusieurs Euphrasia méconnus dans la flore du Maine et de la Basse Normandie.** [Several species of Euphrasia that have been ignored in the flora of Maine and Basse Normandie.] Bull. Soc. Linn. Normandie Ser. 7, **6**: 108–115. 1924.—List of species of *Euphrasia* established by following analytical methods (elementary species, "jordanons").—*M. Denis (translated by E. B. Payson).*

3042. Grier, N. M. **The geology of Long Island with especial reference to the Cold Spring Harbor region and its flora.** Amer. Midland Nat. **9**: 531–563. 1925.—This paper includes a list of the main groups of the plant kingdom, exclusive of bacteria, with the number of genera and species of each. The total number of genera represented is 991; of species, 1,865. An extensive list of literature under the sub-topic "Partial Bibliography of the flora of Long Island and vicinity," closes the paper.—*Sister M. Ellen.*

3043. Grier, N. M. **The native flora of the vicinity of Cold Spring Harbor, N. Y.** Amer. Midland Nat. **9**: 245–256, 283–318, 384–437. 1924–1925.—The author, who is in charge of Field and Systematic Botany at the Cold Spring Harbor Laboratory, lists the native and cultivated plants of the vicinity. The data from which the list was compiled include the names of the plants collected by members of the staff and students as well as records left by former workers at the Laboratory, and other available records in the literature dealing with the flora of Long Island.—*Sister M. Ellen.*

3044. Hauman, L. **Las palmeras de la flora Argentina.** [The Palms of the Argentine Flora.] Physis Rev. Soc. Argentina Cien. Nat. **4**: 602–608. 1919.—The author lists 6 species of palms known to the Argentine (*Acrocomia totay* Mart., *Diplothemium campestre* Mart. var. *genuinum, Cocos poni* Haum. prov. name, *C. Yatay* Mart., *C. Romansoffiana* Cham., *Euterpe*

Egusquizae Bertoni, *Copernicia australis* Becc., *Trithrinax campestris* G. & D., *T. brasiliensis* Mart., and *T. biflabellata* Barb. Rodr.), giving for each one its distribution and its phytogeographic character and observations on its systematic position or on its use by men. Two figures represent *Cocos poni*, a very small species of the Mision plains. The doubtful determination is given because of the impossibility of identifying, by the descriptions, the related species given by Barbosa Rodriguez for Paraguay.—*Author (translated by E. B. Payson).*

3045. Hauman, L. **Neuvas familias de fanerógamas para la flora Argentina.** [New families of Phanerogams of the Argentine flora.] Physis. Rev. Soc. Argentina Cien. Nat. 4: 592–598. 1919.—The author lists some families which have not previously been mentioned or only doubtfully cited, for the Argentine Republic. They are as follows: Velloziaceae (*Barbacenia Castillionii* Haum.), *Lacistemaceae* (*Lacistema Hasslerianum* Chod.), Dilleniaceae (*Tetramera radula* Eichl.), Cochlospermaceae (*Cochlospermum argentinense* [Speg.] Haum.), Ochnaceae (*Sauvagesia erecta* L.). He adds some notes on the Tetrachodraceae, Opiliaceae, Eriocaulaceae, Symplocaceae, and Donatiaceae. *Batis maritima* Kurtz not L. is *Halophytum Ameghinoi* Speg. and the family of Batidaceae should not be included in the Argentine flora.—*Author (translated by E. B. Payson).*

3046. Hée, A. **Note sur le Vicia elegantissima Shuttlew. Nouvelle localité pour la France.** [Note on V. elegantissima. New locality in France.] Bull. Soc. Bot. France 71: 647–649. 1924.

3047. Lacaita, C. **Piante italiane critiche o rare. CIII-CXIV.** [Critical or rare Italian plants.] Nuovo Gior. Bot. Italiano n.s. 32: 206–222. 1925.—The author discusses critically the naming, synonymy and distribution of a number of plants. The Italian plant known as *Ballota rupestris* Vis. should be called *B. hirsuta* (W.) Kern. while that of Spain called by Bentham *B. hirsuta*, should be named *B. hispanica* (L.). *Knautia purpurea* var. *calabrica* and *K. lucana* were both collected on the sides of Monte Vulture. *Malva cretica* Cav. is found in Italy, as also *M. cretica* var. *montana* n. var., which has larger flowers with petals longer than the sepals. *M. althaeoides* is found in Spain and not in Italy. *Marrubium candidissimum* L. is not the Italian species to which the name *M. incanum* Desr. should be given. *Onosma echioides* var. *angustifolium* has been collected by the author in Basilicata. *O. Mattirolii* Bald. collected in Albania is no other than *O. stellulatum* W.K. as found in Croatia. *Prasium majus* f. *spumigena* and *Santolina Chamaecyparissus* var. *etrusca* n. var. are described. *S. neapolitana* Jord. & Fourr. should be retained as a name for the plant wrongly distributed as *S. pectinata* by Bentham. The plant, *S. Benthamiana*, of the Pyrenees should also be called *S. neapolitana*. *S. virens* Mill. (1768) (*S. viridis* W. (1798)) is not an Italian plant. *Seseli viarum* Gal. (1915) and *S. virgatum* Guss. ined. are synonyms of *S. Tommasinii* Rchb. (1867). *Thymus Serpyllum* var. *picentinus* should be abandoned as *nomen confusum.*—*P. D. Caldis.*

3048. Magnel, L. **Annotations au Prodrome de la Flore de Belgique.** [Annotations to the "Prodrome de la Flore de Belgique."] Bull. Soc. Roy. Bot. Belgique 57²: 130–138. 1925. —A long list, with some comments, on plants discovered in Belgian botanical regions where they had not been noticed up to the time of the publication of the "Prodome de la Flore Belge," by Durand and DeWildeman.—*É. De Wildeman (translated by E. B. Payson).*

3049. Verhulst, A. **Essaie de phytostatique en jurassique belge.** [The phytostatics of the Belgian Jurassic.] Bull. Soc. Roy. Bot. Belgique 57²: 147–155. 1925.—The author reviews historically the study relative to the flora of this little Belgian region. He publishes the list of species that have disappeared since the publication of the "Flore Luxembourgeoise" of Tinant, 1836; of those plants which have not been seen for 25–30 years; and, finally, the species discovered since 1864.—*É. De Wildeman (translated by E. B. Payson).*

3050. Viguier, R., et H. Humbert. **Plantes rècoltées à Madagascar en 1912 (suite).** [Plants collected in Madagascar in 1912 (continued).] Bull. Soc. Linn. Normandie Ser. 7, 6: 169–200. 1923 [1924].—A continuation of a catalog of plants collected and belonging to the following genera; their geographical distributions and short systematic remarks are given: *Stenocline, Athrixia, Bojeria, Epallage, Tridax, Siegesbeckia, Eclipta, Aspilia, Spilanthes, Cosmos, Bidens, Cotula, Centipeda, Gynura, Emilia, Senecio, Gerbera, Lactuca, Sonchus, Crepis, Launaea, Hieracium, Rubus, Alchemilla, Dilobeia, Plantago, Rhizophora, Ceriops, Launembergia, Pittosporum, Scavola, Salix, Nepenthes, Nymphaea, Kyllingia, Mariscus, Actinoschaenus, Pycreus, Funcellus,* and *Cyperus.*—*M. Denis (translated by E. B. Payson).*